

COAST ARTILLERY JOURNAL

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16-inch Gun on Barbette Mount Firing at Aberdeen
Proving Ground

FEBRUARY, 1931

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THE UNITED STATES COAST ARTILLERY ASSOCIATION



“The purpose of the Association shall be to promote the efficiency of the Coast Artillery Corps by maintaining its standards and traditions, by disseminating professional knowledge, by inspiring greater effort towards the improvement of materiel and methods of training, and by fostering mutual understanding, respect and cooperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserve and Reserve Officers’ Training Corps.”



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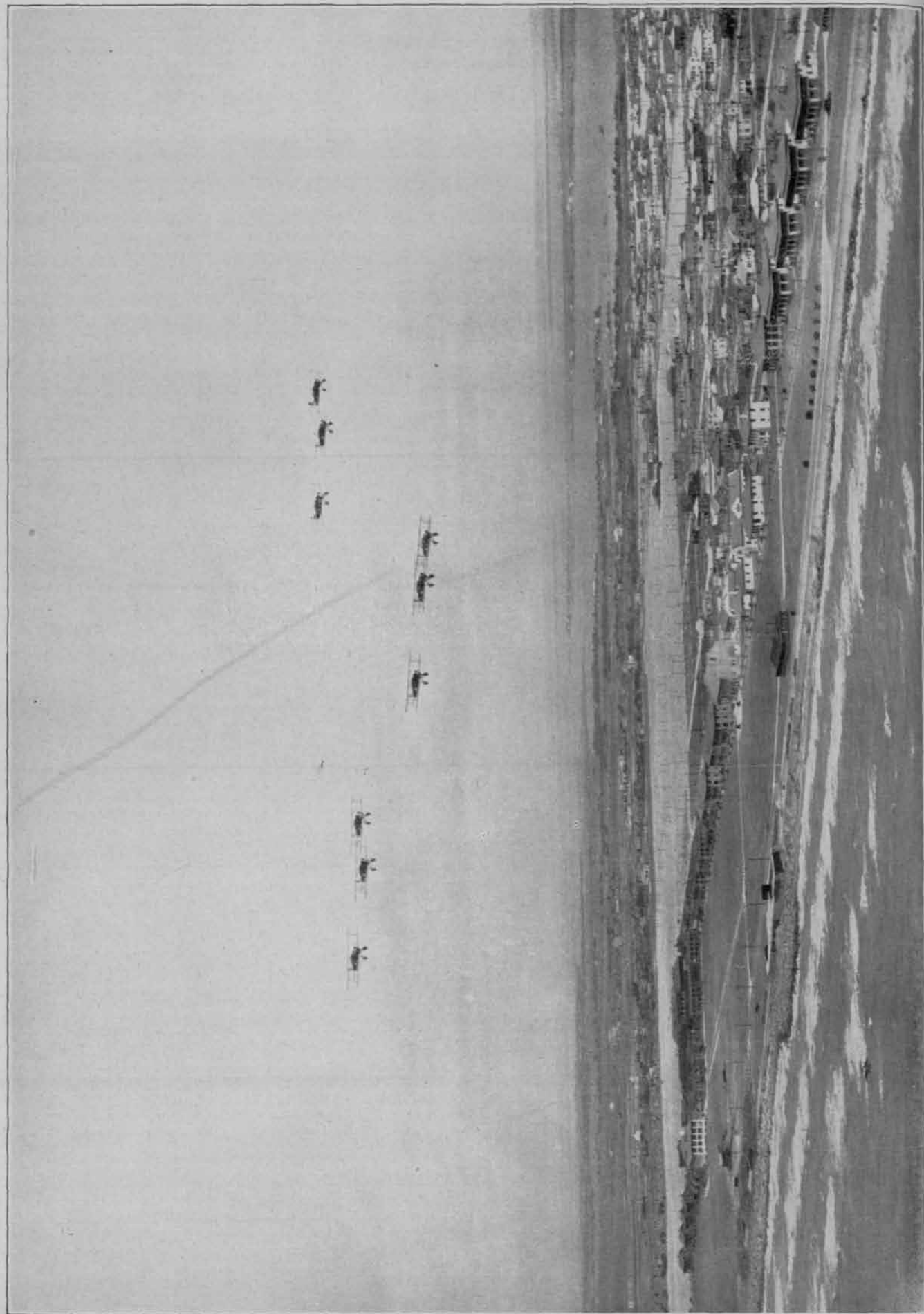
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- a. Civilians who have demonstrated their interest in national military preparedness.
- b. Persons who have rendered distinguished services to the Association or to the United States.”



Air View of Fort Crockett, Tex.

The Effect of the Development of Aviation Upon the Missions and Responsibilities of the C. A. C.

Colonel P. P. Bishop, C. A. C.

Early Aircraft Development

ON September 9, 1908, I saw Orville Wright in his "flyer" take the air at Fort Meyer, Virginia, and stay aloft 62 minutes and 15 seconds. This was an epochal event, comparable with the first voyage of Fulton's steamboat. Prior to this date no man had been able to navigate a heavier-than-air machine and control his flight for such an extended period of time. On the following day Wright broke his own record by staying in the air 65 minutes and 52 seconds. On the third flight this pioneer airman took up Lieut. F. P. Lahm (now Colonel Lahm, Hq. 9th C. A.). With his passenger Wright flew for six minutes and fifteen seconds at an elevation of about 150 feet.

The impressions of the time with reference to the early performances of aircraft were reflected in an article written by Lt. F. E. Humphreys, C. E., in 1910. In this article he stated:

"The next use will probably be in carrying messages. A flyer will average a speed of 40 miles an hour in a straight line. Excepting the telephone and telegraph there is no other method of communication as rapid as flying."

During these early flights the trend of future development of airplanes for military purposes was not visualized.

Although the airplane was not designed originally to be an offensive or fighting weapon, it was used as a military agent for observation purposes prior to the World War. I believe an American flew a commercial plane on an observation mission over Ciudad, Mexico, during a Mexican revolution in 1911. The Italians used 50 horse-power single seaters capable of staying in the air two hours and attaining an altitude of 1000 meters during the Italo-Turkish War, 1911-12. These planes performed reconnaissance missions only, and were of considerable assistance to the ground troops.

Origin of Antiaircraft Artillery

A new instrument of warfare produces at once a reaction dictated by the instinct of self-preservation which results in some kind of defense against it. We find antiaircraft artillery following close upon the heels of military aircraft.

Some foreign countries, including Germany, conducted theoretical discussions concerning ground defense against aircraft as early as 1905. Balloon defense guns were mounted on wheel carriages about 1912. These early efforts amounted to little. Antiaircraft artillery really came into being as a fighting weapon during the World War. Ground defense was crude at first. Means and methods of directing fire against

rapidly moving targets in the air were imperfect. The main reliance for defense against aircraft was the plane itself. Antiaircraft ground defense was a secondary issue and its progress on this account and, because of the inherent difficulties of the problem, was necessarily slow.

Aircraft in the World War

(BALLOONS)

Stabilized warfare on the western front in the World War early suggested the use of the balloon for securing information and locating concealed hostile batteries.

The balloon was effective in identifying targets and controlling artillery fire. Generally artillery officers were employed for spotting the fire of batteries. At the end of 1915 Germany had more than 40 balloon units in active service. A large number of these were employed in the attack on Verdun in 1915. As soon as the effectiveness of balloons was sensed by the enemy he sent against them aircraft equipped for firing incendiary bullets. Losses, heavy at first, were somewhat offset through accelerating the descent of the balloon by powerful motor winches. The use of the parachute was introduced and this added to the peace of mind and efficiency of the balloon crews. Kite balloons, protected by fighting air patrols, were used for spotting in the artillery attack on the German Tirpitz sea-coast battery on the Belgian Coast in 1916.

The Tirpitz battery, after continued bombardments, finally adopted the expedient of putting up smoke screens. These screens were so effective that spotting observations from the air were rendered difficult.

The German coast defenses on the Belgian Coast frequently engaged British naval vessels with great accuracy at extreme range, with the assistance of spotting by kite balloons.

AIRSHIPS

Germany led the world in airship design at the beginning of the World War, and entered the war with 14 airships. While there were no revolutionary changes in design during the war the period is marked by many technical improvements in this type of aircraft. It was realized at once that to avoid the airplane, the pre-war airship must increase its lifting and climbing powers. The L-3 type in existence at the beginning of the war had a net lift of 8½ tons. The L-71, the last ship built during the war, had a net lift of 50 tons. The speed of the L-3 was 45 m. p. h. while that of the L-71 was 75 m. p. h. The ceiling of the L-3 was 6500' while the L-71 could reach 21,000'. The

L-71 had the advantage in ceiling over 1918 models of pursuit planes of the Allies by from 1000 to 2000 feet.

In 1917 the L-59 started from Bulgaria to East Africa to assist German troops, carrying large quantities of ammunition and supplies and flying over hostile territory. The ship was recalled when over upper Egypt. She covered 4500 miles in 96 hours. At 65 miles an hour at a height of 1600 feet, fully loaded, this airship could have traveled a distance of 11,250 miles. The distance to New York from Hamburg is about 3700 miles. The L-100, designed but not built, could have traveled 83 m. p. h. at 6500 feet. Her calculated ceiling was 26,650 feet. Had the war continued it is not beyond the realms of possibility that the L-100 might have visited the United States. We can speculate on the consternation and confusion that would have been caused by the sudden dropping of bombs on New York, Philadelphia or Washington. None of our pursuit planes in existence at that time could have reached this ship at her ceiling. The maximum vertical range of the 3" antiaircraft gun model 1917 MII was about 24,000 feet.

Germany employed 62 zeppelins in the war. Twenty-two of these were destroyed by the Allies. Apparently the Germans considered the following to be the most suitable roles for airships:

- a. Observation patrols over the sea, particularly for the information and security of the fleet;
- b. Raids on countries distant from the home land;
- c. Transportation of munitions of war to distant theatres inaccessible by other means of transportation.

AIRPLANES

Volumes have been written on the evolution of the military airplane and on the exploits of the daring pilots who have accomplished deeds of valor in the air. Who does not remember the story of the American pilot with the Lafayette Escadrille, Lufberry I think it was, who stood up on the fuselage of his plane when it was in flames to wave a farewell to companions below before leaping to his death? This was before the parachute was used by aviators of the Allies.

In 1907 an aeronautical division was established in the office of the Chief Signal Officer of the U. S. Army, and for some years we promised to lead the world in the development of military aircraft. About a year after this step we took over from the Wright Brothers the first army airplane. For a few years we conducted valuable experimental research work with the aid of Wright Brothers and Glenn Curtis, but funds were hard to obtain and a vision of the place of aircraft in warfare was beyond us. We had fifty odd obsolete planes when war was declared on April 6, 1917. When the war ended we were using French and British planes.

In 1914 all the armies had air organization. All told there were about 500 planes available at the beginning of the war, of the general type and performance of those used by Italy in 1911 and 1912.

Observation was the first mission of planes. The British and French depended considerably upon their air intelligence from the first. It is claimed, however,

that the Germans lost an opportunity to destroy the French Fifth Army and the British Expeditionary Force in the advance through Belgium and northern France in 1914 by failure to use the information given them by their air observers. When, after the Marne and the Aisne, stabilized warfare made its appearance, the air effort was principally in connection with securing details of trench systems and local reconnaissance. Missions into rear areas were exceptional. Artillery employment on a large scale suggested aerial adjustment of fire. Rockets, first used for signalling, were eventually discarded for radio. The plane finally was used to maintain liaison between the commander and his troops.

At first planes were unarmed. To protect themselves and for offensive power against hostile planes, pilots soon began to carry bombs, automatic pistols, rifles and even shot guns charged with buck shot. These were discarded ere long for the machine gun, and bombs especially designed for the purpose were employed against ground targets.

One of the most interesting adaptations to air reconnaissance was that of the camera. Photography made great progress in observation missions. In 1916 a 20" camera took a remarkable photograph of the Tirpitz Battery from 14,000 feet. This picture showed minutely the damage to the battery by British guns although a thick mist prevented visual observation at the time the photograph was taken. In preparation for a landing at Ostend in 1917, the British deduced the slope of the coast within an accuracy of 6 inches from air photographs taken at 14,000 feet.

The necessity for control of the air led to fighter patrols or pursuit types.

An attack plane was developed for use against troops and ground objectives.

Bombing planes were designed for the special purpose of attacking airdromes, cities, traffic centers and other appropriate targets in rear areas.

Air attacks were made on vessels at sea, and the airplane was able to see the submarine when submerged at depths beyond the powers of observation of surface craft.

Planes discharged parachute flares, and bombs containing smoke and gas.

Seaplanes discharged torpedoes.

The various purposes for which airplanes were employed led eventually to the development of the following types:

- Observation.
- Attack.
- Bombing.
- Pursuit.

Coast Defenses in the World War TSING TAO

Four 11-inch howitzers and several guns about 4 inches in caliber were mounted in well built concrete emplacements on Bismark Hill. Huichuen Point had solid concrete works mounting two 9.4 inch and three 6" guns. All concrete work was reenforced and guns were in turrets or protected by shields. Photographs indicate that the batteries at Huichuen Point were

mounted low, almost level with natural conformation of the ground. The turrets of these batteries were flat like shallow mixing bowls turned upside down. The batteries were compact and apparently possessed great potentialities for resistance against artillery fire and air attack.

With 5000 men against 63,000 the Germans held out for nearly three months. When their ammunition ran low and they were cut off from all supplies from the sea and land the Germans surrendered.

Allied vessels anchored out of range of shore batteries and bombarded the forts throughout the siege. Continued bombardments caused but slight damage to the German works.

The fort on the sea side—Huichuen Point—suffered very little damage from the fire of ships. The batteries were mounted in turrets.

I find no evidence of serious air attacks on these fortifications. It seems, however, from an examination of the photographs of the batteries that attacks on them from the air would have been more or less futile.

GERMAN DEFENSES ON THE BELGIAN COAST

The following elements were employed:

Close and distant sea defense Seacoast Artillery.

A close-in defense of the entire fortified coast line.

Mine defense, nets, chains and underwater obstacles.

Mobile land forces.

Naval forces, consisting of:

Torpedo boats

Destroyers

Submarines

Motor boats.

Aerial defense, consisting of:

Seaplanes

Land planes

Balloons

Antiaircraft artillery.

The calibers of seacoast artillery were from about 88 m.m. to 380 m.m.

The guns were mounted in the sand dunes, with concrete and earth protection. Generally they were protected by shields or turrets of about 60 m.m. to 120 m.m. thickness. The shields were open only to the rear. The thickest armor was used in a turret battery of 170 m.m. guns. The 380 m.m. guns used only 60 m.m. armor.

Individual batteries were organized for close-in defense, each having machine guns for this purpose. Machine guns in concrete shelters were located close to the batteries they protected. Each battery had at least two machine gun positions, on the flanks.

Batteries were withdrawn from the coast line and well separated. The Jacobnussen battery was located 1600 meters from the shore.

Excellent bomb proof shelters were constructed where gunners could rest in security during the most violent bombardment.

Observing stations were well protected and concealed.

Great attention was given to camouflage and concealment from aerial observation, but these measures

were not effective in preventing discovery of batteries through aerial photographs during the period of their construction.

Antiaircraft artillery was located well back of the shore line. There were a large number of antiaircraft batteries employed ranging from 88 m.m. to 150 m.m.

The mission of the seacoast batteries was to prevent war vessels and transports from approaching the Belgian Coast.

Repeated naval attacks were defeated from 1915 to 1918. The Germans were forced to give up the coast in October, 1918, because of pressure from the land, not from the sea or air. Major Norton and Major Armstrong, C. A. C., in their investigations, found no indication that a single gun in the German batteries on the Belgian Coast was ever put out of action.

THE DARDANELLES

The combined French and British naval forces were unable to reduce the old Turkish land forts at the entrance to the Dardanelles. Some batteries were destroyed and many badly hammered, but with the help of underwater defense and splendid support by intermediate mobile armament these fortifications came through true to form in the duel between ships and guns ashore. They confirmed again Admiral Mahan's teaching that "Ships are unequally matched against forts in the particular sphere of the fort."

There was no extensive air attack in these operations. British observation planes were able to locate permanent Turkish emplacements and count the guns in them with considerable accuracy.

Although the Turks had little air assistance they were able to secure information as to movements of the enemy in time to avoid surprise. This was a big factor in their success.

ANTIAIRCRAFT ARTILLERY GROUND DEFENSE IN THE WORLD WAR

It is said that there were only two antiaircraft guns outside of Germany when the war started. There was no antiaircraft fire control system worthy of the name. In the early stages of the war various types of guns and improvised mounts, not especially designed to fire at air targets, were employed.

The mission of the antiaircraft defense was in general:

a. To reduce the effectiveness of bombing attacks, reconnaissance and observation.

b. To protect troops.

At first the defense did not keep up with the attack. The antiaircraft gun lagged behind aircraft in the duel. However, the ground defense improved as the war progressed. Its effectiveness eventually caused the enemy to confine his bombing missions largely to night time.

In 1915, planes began low flying attacks on troops. This brought forth the machine gun for antiaircraft defense.

The shrapnel ceiling during the war was about 5000 meters. Aircraft were forced in the presence of antiaircraft artillery to fly at heights which certainly tended to reduce efficiency in bombing and observation.

Here is the record of American antiaircraft gun batteries from about July 17 to November 11, 1918:

Number of planes brought down, 17.
Number of shots fired, 10,273.
Average number of shots per plane, 605.

Towards the end of the war the French were bringing down one plane for about every 4000 shots.

The progressive improvement in German antiaircraft effectiveness is indicated in the following table:

Year	No. of enemy aircraft brought down	
	Airplanes	Airships
1915	51	1
1916	320	1
1917	467	
1918	748	
	1,586	2

Antiaircraft artillery was improving rapidly at the time the war ended. The skill of the aerial artilleryman was increasing. Although the defense did not keep up with the attack, by sterling performance under difficulties antiaircraft artillery gave promise of being an arm of influence in future warfare.

Developments Since the World War

AIRCRAFT

Development of military aircraft has advanced steadily since the war. Speed, ceiling, radius of action and rapidity of climb are increasing. Armament and gunnery are improving. Some time ago a bomber scored several direct hits from an altitude of 8000 feet on a bridge 20 feet wide. Radio communication is effective. Tactics and technique are being improved constantly. Military photographs are now taken from heights of 37,000 feet by cameras carried in planes driven by supercharged engines. At 37,000 feet the photographing plane is invisible from the ground.

The following table gives the principal characteristics of the latest types of planes and offers a comparison of these characteristics with those possessed by types in use in 1918.

Comparison of Aircraft of 1918 and 1929¹

1. Pursuit

	MPH Speed	Feet Ceiling	Climb to 16,000 ft.	HP Engine	Lbs. Bomb Load
1918 Eng. (SE 5)	115	19,000	20 min.	150	-----
Fr. (US Spad 220)	130	20,000	25 min.	220	-----
Ger. (Fokker D7)	120	23,000	18 min.	200	-----
1929 U. S. (Boeing P12B)	170	27,000	10 min.	500	-----
Eng. (Hawker Hornet)	224	30,000	6 min.	490	-----
Fr. (Nieuport 62C1)	162	27,000	13 min.	550	-----
1918 AVERAGE	122	21,000	21 min.	200	-----
1929 AVERAGE	185	28,000	10 min.	510	-----

2. Light Bombardment

1918 U. S. (DH4)	125	17,000	45 min.	400	400
Eng. (DH)	90	10,000	40 min.	260	400
Fr. (Breguet 15)	90	12,000	45 min.	350	600
*					
1929 U. S. (A3)	135	16,000	30 min.	435	400
Eng. (Hawker Huston)	187	20,000	16 min.	650	600
Fr. (Breguet 19)	129	20,000	25 min.	480	900
1918 AVERAGE	100	13,000	43 min.	330	470
1929 AVERAGE	150	19,000	24 min.	520	700

Note: ¹ Compiled by 1st Lt. J. P. Hodges, A. C.

*Attack type.

3. Heavy Bombardment

1918 Eng. (Handley Page)	30	10,000	2-260	1900
Fr. (Farman)	50	8,000	2-220	1400
Ger. (Giant)	30	10,000	4-260	2200
1929 U. S. (B2)	130	16,000	2-600	4000
Eng. (Handley Page)	120	14,000	2-460	2400
Fr. (LeO-20)	122	18,000	2-480	3000
1918 AVERAGE	80	9,000	660	1800
1929 AVERAGE	124	16,000	1025	3100

Our experimental work with aircraft was advanced after the war by the plant and air service personnel at McCook Field. This experimentation continues. We strive constantly to keep abreast of foreign nations in aircraft design. We will soon parallel the English Hawker Hornet pursuit with its speed of 224 m.p.h., 30,000 foot ceiling, and capacity to climb 16,000 feet in 6 minutes.

It is difficult to evaluate war effectiveness of present day aircraft. Certainly we cannot judge this matter from evidence of 12 years ago.

Fortifications

Our batteries were built in the last years of the last century and the early years of the present. Every one is familiar with the type. Guns are mounted in concrete emplacements with spacious surrounding platforms. They are well protected from low angle direct fire from the sea by concrete and earth parapets. They are wholly exposed and vulnerable to attack from the air, and there is no protection against gunfire from the rear. Disappearing carriages might be neutralized in a heavy bombardment, temporarily at least, by debris. Fire control stations are vulnerable and often very much exposed. Aircraft was not thought of when our fortifications were built. Batteries have not been modified for protection against air attack. Some attention has been given to camouflage and means for protection against gas; but our batteries are not now and cannot be camouflaged effectively without considerable work and some expense. Thought is being given to plans for close-in defense protection of batteries against landing parties and low-flying air attack. No provisions have been made for use of smoke for concealment against hostile air reconnaissance or spotting of gun fire although tests with a view to such concealment have been made. Sixteen inch batteries have been installed in recent years for the defense of certain important naval bases, harbors and commercial centers. Projects are under consideration for additional 16-inch guns at other important places. When these projects are completed our harbors of greatest strategic importance will have potential gun power to hold off the most powerfully armed vessels afloat. These 16-inch batteries and their required installations are afforded better protection than the older type batteries, by dispersion and concealment of their separate elements.

Our mine defenses are still adequate for their role within the range of protecting guns and searchlights. The single conductor cable recently adopted is a success and makes possible the maintenance of mine projects without the prohibitive cost entailed formerly by the employment of 19-conductor cable.

Our searchlights are effective when visibility is ex-

exceptionally high up to 20,000 to 24,000 yards. However, in our service, this exceptionally high visibility is found only in the tropics in favorable weather. Normally in the states, lights are effective up to 7000 or 8000 yards.

Railway and tractor drawn artillery add to the strength of fixed harbor defenses and have a most important role defending points on the seacoast not provided with fixed fortifications.

The strategic mobility of railway artillery permits its use on either coast.

Our latest 30-inch antiaircraft gun as mounted is extremely mobile. It can be moved out of a position, or emplaced, in 15 minutes. By using the T-6 director it can fire on both air and water targets.

Antiaircraft Artillery

Publicity, a few years ago during tests of antiaircraft materiel against aircraft in this country, left doubts in the public mind as to the effectiveness of antiaircraft artillery defense. People who live in large cities vulnerable in time of war to air attack should know that present day antiaircraft artillery defense is by no means ineffective. It would be unfortunate if any members of the military service should enter another war believing that antiaircraft artillery is not to be taken seriously. In another war aviation tactics unquestionably will be altered by the capabilities of the ground defense. I doubt if the layman has any conception of the advances that have been made in antiaircraft artillery since 1918. Antiaircraft artillery today is well in the forefront in the science of gunnery. Who knows but that it is showing the way to other types of artillery whose missions include firing at fast moving targets on water and land? The antiaircraft artillery which was in its infancy during the war has acquired the stature of a fully developed man in the past 12 years. This grown-up fighter has a powerful punch, is fast, has astounding reach, keen eyesight and marvelous footwork. Some of the outstanding post war developments are:

Increased muzzle velocity of guns:

The present three-inch gun has m. v. of 2800 f. s.

Increased rate of fire:

The latest four gun 3-inch battery will fire at least 100 shots per minute.

Increase in mobility: Gun batteries are now being moved at 40 m.p.h. on good roads.

Better ballistic type of high explosive projectile.

New mechanical fuze of practically perfect performance.

Flashless powder, which helps to protect the battery against ground and aerial observation.

Improved searchlights, sound detectors; and comparators coordinating the two.

Highly perfected directors, which are mechanical robots figuring the future position of the target and calculating ballistic corrections to place the projectile on the target with mathematical accuracy. These machines supply information to the guns through electrical connections, it being necessary for the gunners merely to match pointers on the data receivers to keep guns laid constantly on the point in space where the target and projectiles will meet. The fallible human element in operating many devices and shifting the data from one to the other is largely eliminated. Observers sighting through telescopes attached to the director merely follow the target vertically and horizontally. Corrections for ballistic wind and other atmospheric conditions, not agreeing with normal range table values, are made by the director.

Muzzle velocities are actually measured by the field chronograph. This is a great advance over methods previously used when the M. V. was an unknown quantity and through necessity corrections were made for an assumed muzzle velocity which was in fact erroneous. M. V. is no longer an unknown quantity in the field. With the rapid erosion of these high velocity guns it is important to keep accurate check on developed M. V.

An eroded gun can now be made as good as new in a few minutes by the insertion of a liner. This facilitates continued maintenance of the accuracy of the gun.

One of the most important recent developments is the mechanical fuze which functions uniformly at all altitudes—the realization of the artilleryman's dream.

Post war developments have made our range finding equipment equal to the best, and our gun carriage superior probably to any in existence.

The following table summarizes the characteristics of antiaircraft guns of different models:

Characteristics of Antiaircraft Guns¹

Model	Length of Bore (Cal.)	Muzzle Vel. (f.s.)	Min. & Max. Elevation	Maximum Hor. Range (Yds.)	Maximum Vert. Range (Yds.)	Time of flight (sec.) Altitude = 4500 yds. Hor. Range = 4500 yds. Slant Range = 6364 yds.
3" AA. Gun M-1917, 1917 M1 and M11 (Fixed)	55	3000 2800 2800 (used)	—5° to 90° (Stop at 85°)	15,400 11,750	10,400 8,050	No data 12.6* 15.2**
3" AA. Gun M. 1918, on auto trailer carriage M1917	40	2400	10° to 85°	12,140	8,050	16.0**
3" AA. Gun (1925) M-1, 2, 3 and 4 (New Standard Mobile Gun)	50	2900 2800	0 to 78°	15,400	10,400	15.2** 12.6**
105 mm. AA. Gun M-1927E (Fixed)	60	3000 2800 (used)	—5° to 80°	No data 20,600	No data 14,000	No data 10.3**

Note: *Mechanical Fuze. **Powder Train Fuze.

Types of AA Guns used during the World War:

Germany: Semi-fixed, 77, 88 and 90 m.m.; Auto-mounts, 77 m.m.; Trailer mounts 80 and 88 m.m.
France: Auto-mounts 75 m.m.; Trailer mounts (indirect fire) 75 m.m.; Caterpillar mount 105 m.m. (1918).
Great Britain: 1 Pdr (pom-pom); Fixed and semi-fixed, 6-inch How. 4.7 and 4 in. Guns: Pedestal and truck mounts, 3 in. Mobile mounts, French 75 m.m. (auto-cannon), Caterpillar Mount 3.6 in. (Late in 1918).
Russia: Trailer mount 76.2 m.m. Italy: Truck, trailer, and fixed mounts, 75 m.m. Note: ¹Compiled by Capt. F. E. Edgecomb, C. A. C.

Much has been written about the improved accuracy of the present antiaircraft guns. This can be judged of course only by range firings and target practice. These show that the rate of fire has been doubled and hits per minute trebled since the war. Captain Wells, O. D., a thorough student of modern antiaircraft artillery believes that the efficiency of our new antiaircraft equipment measured by the old may be expressed conservatively in the ratio of 5 to 1.

Conclusions and Comments

The conclusions and comments which follow are my own. I am perfectly agreeable that they be questioned.

Balloons are capable of performing a profitable role in coast defense, for information and observation of fire missions.

Airships can be employed to great advantage for observation missions off our seacoast frontier. Experimentation on purely military designs should be continued. As a war measure there should be in times of peace, offensive and defensive tests of military types of airships. Incidentally this experimentation in the military service will encourage commercial development of the airship industry.

It is worthy of notice that the United States possesses the world's only source of helium, except through extraction from the air, in its helium bearing wells in Texas, Kansas, Colorado, Wyoming and Utah.

Aircraft development has added to the strength of coast defense by:

a. Extending reconnaissance seaward to greater distances than had been possible by terrestrial observation.

b. Extending spotting of artillery fire to extreme ranges of armament.

c. Locating targets and spotting artillery fire when smoke screens or fog banks make observing and spotting from shore impossible.

d. Air Force operations against hostile vessels beyond the limits of fire of seacoast batteries.

e. Protecting coast defenses against hostile air reconnaissance and attack.

f. Searching defended areas and illuminating targets by flares.

Some or all of these advantages may be lost when the enemy has control of the air in the zone of action involved. In this situation harbor defenses will be subjected to hostile air reconnaissance, attack and spotting of gun fire; and local antiaircraft artillery protection will assume a role of vital importance.

An enemy probably will not make a determined attack on fortifications in the future without air superiority.

Friendly air forces normally will not be available to assist harbor defenses except for protection of strategic objectives threatened by the enemy. Local protection against air raids of harbor defense installations, harbors and seacoast cities, and commercial centers and strategic points inland, as a rule must be provided by antiaircraft artillery alone. If sufficient attention is given to organization of the defense of a locality, present day antiaircraft artillery can either

defeat air raids, or make them costly and unprofitable to enemy, far from home bases.

Superiority in the air will give a fleet attacking fortifications a great advantage over harbor defenses, especially if shore batteries and antiaircraft artillery can be neutralized temporarily by gas, bombing, and machine gun fire.

Employment of antiaircraft artillery in cooperation with the Air Corps brings up many problems worthy of coordinated study. It is essential that our antiaircraft gunners be able to identify hostile and friendly aircraft and that they do not fire on friendly planes. Identification and recognition signals are necessary. It is desirable that plans for coordinated action in any probable situation be studied and practiced by Air Corps and Coast Artillery troops. Intercommunication must be prompt and reliable. When supporting air forces are on the ground the intelligence system must warn them of impending attack in time for their pursuit planes to take the air and rise to fighting altitudes before the enemy arrives. The airman and coast artilleryman must work hand in glove in peace and war. It is difficult under stress of battle for organizations on the ground and within shouting distance of each other to work perfectly together to a common objective. It will be infinitely more difficult for the soldier in the air and the soldier on the ground to pull together as a team.

In an attack against a fortified harbor or other area where antiaircraft artillery is located, and especially against our coast line if hostile floating antiaircraft artillery can not approach the shore, antiaircraft artillery defense will be of great assistance to the friendly air force. In the latter contingency the fight over the land in the early stages of the operations will be by the enemy air force alone against the combined strength of our air force and antiaircraft artillery.

A well-organized intelligence service is necessary for protection against air attack. This involves the establishment of observation posts about a defended area to at least a hundred miles in the direction of threatened attack. Efficient and prompt communication throughout the net is essential. Information must get in quickly or it is worthless. Air targets move fast. In operations on the seacoast, the army and navy intelligence services must be coordinated. These nets must tie in with naval district, army sector and subsector headquarters, and means must be provided for communicating necessary information concerning fast moving air and water targets directly to Harbor Defense Headquarters and local air forces as well as to the higher echelons. This work is so vital to success of the defense that carefully planned combined operations stressing intelligence intercommunication should be held frequently by the Army and Navy in time of peace. Nets must connect up with coast guard stations, lighthouses, and commercial communication systems. The Army nets should be planned in detail. They must be operated with skeleton crews in time of peace. Plans should make provisions for the employment in an emergency of reclassified military personnel

unfit for active duty in the field, and for the use of civilians who volunteer on the outbreak of war, as observers, telephone, telegraph and radio operators.

Junior officers of Coast Artillery should receive training as artillery air observers. This association in training with air officers gives the artilleryman a better understanding of the need for cooperation with the air force. It gives the officers of one arm a better appreciation of the powers and limitations of the other.

In 1926, the War Department announced a policy requiring officers of less than 15 years' service to receive air instruction including actual experience of at least 10 hours flying. Due to lack of funds and absence of legislation providing extra hazard compensation for those undergoing "aerial experience," the policy was modified, and only volunteers are now getting the instruction, except for a limited number of officers who are put on a flying status for observation of artillery fire, and for certain officers detailed at the Air Corps Tactical School. It is unfortunate that this important phase of the training of our officers can not be provided in more adequate measure.

The air force is a fighting arm of power but there is no present prospect that it will displace other arms. It is an important member of the military team. It assists the forces fighting on the ground and water to secure victory. From a consideration of the progressive development of air forces and the importance given them by all nations it is a reasonable assumption that in the future victory will not be possible for armies and navies without strong air assistance.

The development of aviation has initiated a new epoch in the history of artillery. It has brought to the Coast Artillery Corps of our Army an added responsibility and a broadened mission which now includes activities not only on the seacoast frontier but in the zone of the interior and with armies in the field.

The Air Corps is appreciated by the artilleryman. We see where it will aid us in the accomplishment of our mission in time of war. The hum of friendly engines over our heads will fall on welcome ears in time of stress. In peace it assists in our training. We owe our thanks to the pilots who tow sleeves and observe artillery fire. It is often drudgery, especially when there are interruptions of fire due to shipping and bad weather conditions.

Seacoast batteries may be given protection against enemy air spotting and to a certain extent against air reconnaissance and attack by timely use of smoke screens.

Bomb-proof and gas proof shelters should be provided to shelter gunners and observers securely when they are unable to man the guns, and as protection against air attack.

If new batteries are constructed they should be located at least 500 yards in rear of the beach line to permit the emplacement, in front of them, of machine guns for their protection against air attack from over the water.

High skill in individual training is necessary in anti-aircraft artillery defense. This is particularly essential

in the employment of machine guns against fast, low-flying planes.

As much time as it is possible to give to machine gun practice could be devoted advantageously to firing machine guns at improvised targets simulating as far as possible maneuvers of attack planes. Our junior officers should receive a thorough course of instruction in machine gunnery. This should include study of the location and employment of machine guns for close-in land defense of batteries and for the protection of all harbor defense installations against aircraft attack.

Close-in defense of harbor defense installations against raids and attacks from the air and land should be planned and actually constructed in time of peace. Machine guns for protection against attack planes should have steel overhead protection sufficient to resist fragmentation bombs, and machine gun fire. Experimentation with a view to gas proofing these emplacements is desirable.

Clothing to protect personnel against gas should be designed, and plans prepared to insure its prompt issue to troops if this is found to be necessary in an emergency.

Although it is not absolute protection against reconnaissance from the air, more attention should be given to camouflage of seacoast batteries. Plans should be prepared for construction of dummy batteries and stations.

A special study should be made of sand bag protection against aircraft attack of guns mounted in open emplacements. It will be interesting to test a battery, protected as best it may be, *by actual attack from the air with fragmentation bombs and machine gun fire.*

Guns of seacoast batteries should be installed in turrets. Because of the restrictions upon the military budget, and the undesirability of proposing extensive modifications of seacoast fortifications at considerable expense this step is not advocated for batteries now in existence. With sand bag protection, and adequate antiaircraft gun, machine gun and searchlight defense in the hands of skilled personnel equipped, if necessary, with protective clothing and gas masks, we should be able in combined air and sea attack to keep sufficient guns in operation to fulfill our missions. However, it is believed that turret protection should be provided for any guns installed in fixed seacoast batteries in the future. These should be designed to protect personnel against persistent gas. The 8-inch turret batteries on our treaty cruisers are constructed to afford protection of personnel against gas at all times, even when the guns fire at extreme elevations.

Although Naval limitations are reducing battleships to numbers which makes it unwise to risk them in action against fortifications, the need for the heaviest seacoast calibers will continue to exist as long as there are capital ships. However, the present trend of naval development indicates that our heavy batteries should be supplemented by rapid fire medium caliber long range batteries. A high velocity 8-inch gun would appear to be an effective coast defense weapon against the present treaty cruisers and other fast moving naval craft not too heavily armored, even at long ranges.

It should be mounted in a turret. It should have 3000 f.s. velocity and should be capable of a high rate of fire (about 14 or 15 rounds per minute), with a range of about 30,000 yards. Considering what is now being accomplished it might not be too great a strain on the imagination to visualize this gun, properly mounted, also firing with director control on airships or air bombing formations by sound or Infra-Red ray detection when these targets are beyond the range of visual observation.

As far as we can see into the future this country will never fight a purely aggressive war. If we are ever in a death struggle for existence and are driven from the seas, harbor defenses will play a vitally important role in defense of the homeland. Prior to invading the country an overseas enemy must have protected bases on American shores. I firmly believe that bases on our seacoast frontier provided with well manned harbor defenses will be denied him. This belief is based primarily on the performances of fortifications in past wars. There is no reason now to believe that results will be different in the future.*

The role of Harbor Defenses has not been altered by the development of aircraft. There is no evidence to warrant the conclusion that the mission of coast fortifications under any reasonable assumptions could be accomplished by air forces.

Air and sea attack separately or in combination may neutralize guns or batteries but can not destroy good fortifications.

Strong, well-manned fortifications can be kept from accomplishing their missions only through capture by land attack. Successful land attack probably will be delivered in combination with the action of both sea and air forces.

Note *—It is to be understood, of course, that coast fortifications will play their part in the properly organized military team on the seacoast frontier and that they will be coordinated with local naval defense forces. I heartily agree with Major R. H. Smith that "All military forces of the country must be employed as a combined team in coast defense as in all warfare."

Antiaircraft artillery is making splendid progress. In its present state of development its mission includes:

Protection of armies with their impedimenta in the field.

Protection of installations of military value, and cities, in the rear of armies back to and including the zone of the interior.

Protection of defended harbors, bases and commercial centers on the seacoast frontier.

Protection of aerodromes and ground installations, for the purpose of freeing friendly air forces for the accomplishment of their missions in the air.

Assistance of Air Forces in combat.

I recently observed performances of our latest type antiaircraft guns, and fire control equipment at Aberdeen Proving Ground. The shooting was impressive—far ahead of that witnessed only four years ago. The Coast Artillery Corps is meeting with splendid success its new responsibilities in the development of antiaircraft artillery. It is difficult to visualize the expansion of antiaircraft artillery that will be needed in war. Skilled personnel in far greater numbers than it now seems possible to provide will be required. It behooves us to look ahead. This new weapon, this new adaptation of the science of artillery, demands the highest professional attainments on the part of all Coast Artillery officers.

Above all we must not forget that good soldiering is the fundamental basis of military success and that teamwork and cooperation with other arms and branches of the Army and with the Navy is more essential than ever before if we are to meet our full responsibilities as a member of the highly trained and ever progressive military team of today.

Note: I appreciate the assistance afforded by the references given below and by the compilations and suggestions of officers with whom I have been thrown in pleasant contact at the Coast Artillery School, Fort Monroe, and Langley Field, during the preparation of this article.

P. F. B.

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New Developments in Warfare

General C. P. Summerall

METHODS of welding men and material into combat units change constantly. The fundamental element—man—has remained practically constant throughout the history of warfare; but weapons have varied in accordance with the progress of science. The tendency of the present age is strongly towards an ever increasing application of scientific means. Automotive, aeronautical and chemical developments during recent years have introduced elements that will materially affect the composition of future armies, particularly our own.

The Mechanized Force

A new element foreseen as a development in the armies of the future is the mechanized force.

One of the surprising phenomena of the World War was the great gain in the relative power of the defense, due largely to the increased fire power of automatic weapons combined with obstacles and the absence of exposed flanks. The attack first sought to overcome this disadvantage by huge expenditures of artillery ammunition designed to cover completely the entire area held by the defense and crush the defender on his positions. The long preliminary bombardments, however, eliminated any surprise effects, the defender withdrew his principal forces to a second position out of range of the attacker's artillery, and the attack succeeded in gaining only a few kilometers, frequently at the expense of ghastly losses. As a result there developed on the western front a prolonged period of stalemate, during which neither side was capable of gaining a decisive victory. Then the idea of advancing the attack by the aid of armored vehicles took form in the tank, which gained its first great success at the Battle of Cambrai.

The World War tank was a vehicle of such low speed that it could only be employed as an immediate auxiliary to the infantry. The success which was attained with this weapon in its primitive stage of development has led to the expectation that with the improvements certain to take place as the result of more deliberate design and automotive progress, the tank can be made an instrument of sufficient power to break up a stabilized situation, restore mobility to the battlefield, and return to the offensive its superiority over the defense as a mode of combat action. Tanks with a cross-country speed of from 20 to 30 miles are now foreseen and will undoubtedly be developed in the near future. This increase of speed will have two important results—it will endow the tank with comparative invulnerability to direct hits by artillery; and it will require its separation in part from immediate attachment to infantry units in order that advantage may be

taken of its superior mobility. From the latter action, it will follow that from being an immediate auxiliary of the infantry, the tank will become a weapon exercising offensive power in its own right.

All of the foregoing leads to the conception of a mechanized force of which tanks form the backbone. Since the tanks have little holding power, such a force must include a highly mobile infantry to hold the ground gained by the tanks. As this infantry must be given great defensive power, its armament will consist for the most part of automatic weapons. In view of the distance from the principal forces at which the mechanized force will operate, it will require the support of artillery immediately at hand and must therefore include in its composition an artillery element having a mobility equal to that of the tanks. It must be self-contained in other respects and receive the necessary quota of chemical warfare weapons, antiaircraft, engineers, signal corps, and transport, all adapted to movement conforming to the tanks and especially equipped for the accomplishment of this particular mission. Its action would be supported by the aviation of the field army to which the mechanized force would normally be attached. The requirement of mobility leads to the adoption of the tank chassis for a large part of the gun mounts and cross-country transport of all elements of the force.

Since the tank forms the basic element of the mechanized force and its chassis will be extensively used by other elements of the force, the progress which has been in development of a suitable tank becomes of especial importance in this connection. It is therefore most unfortunate that no tank satisfactory to the using arm of the service has been produced. Twelve years after the World War we are still dependent upon the war-time model.

In the summer of 1928, an experimental mechanized force was assembled at Fort George G. Meade for the test of matériel and the development of tactics and organization applicable to such a force. This improvised force was equipped with such matériel as was then available. The speed of the tanks was so low, and the matériel was so obsolete, that little knowledge of value was gained. The latest tanks developed by the Ordnance Department were tested and found to be unsatisfactory. A board was appointed to study the results of the experiment and submitted recommendations for the organization and equipment of a mechanized force. The execution of the recommendations depended upon securing funds for the manufacture of modern equipment, assuming that the ordnance tank could be satisfactorily modified. It was found, however, that this tank could not be so improved. There

exist good grounds for belief that the latest tank developed by the inventor, Mr. Christie, may prove satisfactory. In that case funds will be requested for its procurement. The tank board has also a promising project for reengining the war-time tanks and thus obtaining a speed which will permit their provisional use in a mechanized force. Based on this progress, a mechanized force, as recommended by a board which has recently completed a restudy of the organization, was assembled at Fort Eustis on October 1, 1930, equipped with all old and experimental matériel available.

The tendency toward what is generally known as the mechanization of the military forces is now the subject of intensive investigation in all the important armies of the world. It has developed extremes of opinion and much diversity of view as to details of equipment, organization, and tactics. The extreme progressives foresee the army of the future composed solely of air forces of much greater power than those heretofore known and ground forces endowed with high mobility by automotive means, capable of rapid movement both on the road and across country under armored protection, and equipped with high-powered automatic weapons including chemical warfare appliances. Since the vast amount of matériel, supplies, and repair units required for the equipment and upkeep of such a force would preclude the organization of the mass armies of the past wars along these lines, the proponents of this view maintain that the mass army will disappear entirely from the battlefield of the future and that such an army would be helpless to resist the attack of a mechanized force. A more moderate view concedes the value of a mechanized force as a powerful mobile auxiliary, but maintains that mobility and shock action have never been the sole qualities sought in a military force and that a force endowed with high mobility must necessarily make a great sacrifice of fire power in favor of rapidity of movement. As in the past we did not have armies composed exclusively of cavalry, so for the future we do not foresee a completely mechanized army.

We are perhaps in a transitional period, the precise outcome of which no one can foresee. What is certain is that no nation is at present prepared to abandon the mass army as the principal reliance of its national security. It is none the less important that close attention be given to the development of a mechanized force, its organization, tactics and logistics, and to the influence of mechanization upon the composition and operative methods of the other elements of our forces.

Air Corps

The most striking development of the World War was in the air. A new arm came into being through this medium, took its own part in combat, and supplemented and assisted the activities of the other arms.

The Air Corps as a separate arm in the Army of the United States was created by the National Defense Act of June 4, 1920. Developments in the new arm were so rapid as to require individual legislation, and it was increased and reorganized under the act of

July 2, 1926. Three annual increments of the 5-year program provided by the act have been completed.

The five-year program was instituted in 1927, and the Budget has been called upon to provide not only the specific elements enumerated in the law, but for extensive costs of operation, research and development, technical construction, housing, grades and ratings, and various other demands not originally contemplated in the scope of the program. All this has been done by curtailment of other activities. The rest of the Army has, moreover, been required to reduce its troop strength to supply the commissioned and enlisted personnel of the annual increments of the Air Corps.

The mission of the Air Corps is to provide a highly mobile combat element, which in tactical and strategic combination with other arms conducts such air operations as are required for carrying out the Army mission. Its essential characteristics are mobility, fire power, and ability to observe and attack surface or air objectives at distant points within enemy territory or off the coast. Its weapons are gas, aerial bombs, and machine guns.

While the Air Corps forms a component part of the Army, it possesses certain characteristics which enable it to conduct separate operations in furtherance of the general army mission. In combat with enemy air forces, in long-distance reconnaissance and destruction, it must frequently conduct its operations apart from other arms. It has probably exercised a greater influence in modifying the postwar organization and operative methods of other branches than any other single factor.

The fact should not be lost from view that a great change has taken place in our air situation during the past four years. In 1926 our greatest weakness in the air was probably to be found in the fact that our aircraft industry was almost nonexistent, that but little production could be expected for more than a year after the outbreak of a war, and that there was no commercial aviation to develop trained flyers from whom an adequate reserve could be drawn. The extraordinary development of commercial aviation during the past four years has brought us to the point where we are now the leading producer of aircraft in the world and where we can actually enter upon the quantity production of military airplanes long before we could reach a similar stage in the manufacture of ammunition. It has made available a reserve of flyers, who, though not trained in the fighting of military airplanes, could be made efficient military pilots in a much shorter period than the totally inexperienced personnel upon which we would have had to rely in 1926.

The completion of the five-year program will bring our Air Corps to a much higher state of relative readiness than any other branch of the service.

Chemical Warfare

Another agency of warfare developed by the World War includes all those means of combat action which are embraced under the term, chemical warfare.

These include toxic and nontoxic gases, smoke, and incendiaries.

It has been the aim of our Government to seek for the international outlawry of the use of toxic gases as a means of combat action. It initiated the prohibition of the use of noxious gases in war which was incorporated in Article V of the treaty concluded by the Conference on the Limitation of Armaments but which has not come into force, due to incomplete ratification by the participating nations. In conformity with the general governmental policy, it has been the policy of the War Department to refrain from training troops in the offensive use of chemical weapons.

Nevertheless, the fact remains that no international agreement restricting the use of chemicals is now in force. It would, moreover, be an extremely hazardous policy to rely on an international agreement as a complete protection against chemical attack. In a death struggle for existence, there would always be the danger that a nation in dire straits would resort to chemical weapons if it saw in that agency the means of escaping defeat and achieving victory.

In the present situation, the most that we can do is to pursue laboratory investigations into chemical developments and train our troops in protective measures

against gas attack. In the training of all branches, the conditions of gas warfare must be assumed in order that the troops may be partially prepared to meet the probable conditions of future battle.

The three agencies above discussed—fighting machines for ground troops, aircraft, and chemical means—are the newer forms of military force. They have brought about important modifications in the organization and tactics of the older branches. Within the older branches, a partial substitution of machines for man power is taking place, and motor transport is replacing animal drawn vehicles wherever practicable. The development of new means and the gradual change of older ones should not distort our perspective of the army as a whole. Infantry remains the basic arm. Coast artillery is essential for the defense of our important harbors against naval attack, and for the service of anti-aircraft guns. Field artillery continues to be indispensable to the success of the Infantry. Our national situation has repeatedly proven the value of the Cavalry, and our geographic location emphasizes the necessity of Cavalry for the future. New developments should receive constant attention; but they should not be permitted to jeopardize the efficiency of arms that have been subjected to the battle test.



Sound Detectors in Operation at Mitchel Field, N. Y. During the Annual Tactical Inspection of the 62nd C. A. C. (AA)

The British Army Exercises of 1930

Captain B. H. Liddell Hart

IF any general increased his reputation in the exercises of 1930 it was General Rain. He showed a genius for striking at the crucial moment, a malevolently inspired *coup d'oeil* which other generals might justly envy. And unfortunately, like certain famous generals of the past, he seemed to have a jealousy of possible rivals, which made him uncannily alert to forestall and frustrate other generals.

This year he was unique in the decisiveness of his strokes. He even performed the "hat-trick". For, by curious coincidence, he submerged in turn the final exercise of the 4th Guard Brigade, of the 2d Division, and of the combined Aldershot and Southern Command troops on "the Plain". The consequences were the more disastrous because each of these exercises gave promise of being the most interesting of its series, a promise that was never fulfilled. In the first the South Downs were metamorphosed into foot hills of the Himalayas for the purpose of trying out new methods in frontier fighting. There was also the exhilaratingly original spectacle of Guardsmen turning themselves into guerrillas and applying Lawrence's axiom that for such warfare the normal principles of war should be inverted. One has long been convinced that a periodical course in guerrilla tactics might do much to develop the present rather drab standard of infantry tactics in the British army.

In the 2d Division exercise, General Rain's night attack forestalled a night attack by the ground force. This was the more unfortunate because the project of such a stroke was a refreshing change from the usual dawn attack and it would have been interesting to see, or at least to hear, its upsetting effect. The consistency of the British army is both its strength and its weakness. If we try a new thing as a surprise, we are apt in our delight to continue it as a custom—and so to strip it of surprise. Dawn attacks themselves were originally a means of taking the opponent off his guard. Now they have the popularity and publicity of a film star. And unwind themselves with the regularity of a film. Indeed, it is a real surprise, and relief, to the onlooker if any exercise does not work up to an attack at dawn.

Even more untimely was the fate of the final exercise on Salisbury Plain, for it seemed almost certain that here we should at last see the improvised Medium Armored Brigade used as a whole, and used in a way suitable to its qualities. Thus we might have enjoyed one positive example of the test which this year's chief innovation was devised to produce. Previously the tanks had been launched so regularly against prepared positions, in nullification of their mobility, that one might almost conclude that, like driven game, they

were meant to be shot. If the idea was to produce a battle, it really produced a battue. And if they were not thrown against the strong front of an enemy position, direct along the all too certain line of expectation, they were reserved to throw at the opposing tanks, apparently on the subconscious theory—"Let the tanks kill each other, then we can get on with the war."

It was reserved for General Rain to punish these slips. And he allowed no chance of redemption. Through his intervention, the training season was shorn of the ultimately positive lessons in the art of generalship and in mechanised maneuver that it might have yielded. To the cultivation of generalship the loss was specially unfortunate, because each of these three schemes put a premium on unconventional methods and incited the commanders to elasticity of plan and execution. To the development of mechanisation, the abandonment of the last exercise, especially, means that we are left for 1930 to reflect chiefly on examples of how armored forces should not be used and the power of mobility abused.

Negative examples are not helpful to clear deductions. They impose a heavy demand on the imagination, and require the ability to distinguish between the main currents and the surface ripples. Observers are liable to let their judgment be deflected by minor details, and to focus on incidents produced by the artificial conditions of peace, whereas they should be trying to gauge the general trend in the light of real war conditions.

To do so is not easy when exercises have to be carried out on the government ground at Aldershot and on Salisbury Plain, areas absurdly narrow in comparison with even the present range of mechanised forces, and further cramped by wire fences and innumerable "out-of-bounds" patches. To see a battalion of tanks advancing in a long string over open downland because they were confined to the road by a few strands of wire was a ridiculous sight. It violated the essential nature of tank action, which on cross-country movement and wide frontages. Care for such restrictions is often carried to a pitch of both tactical and financial absurdity. One has seen tanks waiting to pass in turn through a gate, rather than break through a fence that would have cost a few shillings to repair. Yet, besides offering a bunched target and delaying their maneuver, they were consuming pounds' worth of petrol and oil meanwhile.

The Army at home has no training ground which offers scope for realistic test of, and practice for, the new mechanised forces. Perhaps the only remedy might be to move these mechanised forces to the vast

and sparsely populated areas of central Wales for an annual period of training.

The worst danger of the present limits is psychological. It lies in the difficulty of shaking off such artificial habits, and the cramped ideas they induce, when war comes.

In this connection there is an amusing story in General Spears' "Liaison", just published. On arrival near Mons, with the shadow of the German masses creeping perilously close, a message was received from the cavalry to ask if they were "justified in loopholing the walls of a farmhouse." Evidently they thought they were still at maneuvers.

In another place the author particularly remarks: "In war . . . the soldier is either too tired or has no time to think; he will only do what comes to him naturally and instinctively, through long usage." One fears that if war came much of the value of mechanised troops, and of the new mobility, would be forfeited through the shackles of peace-training habits. It is all too probable, also, that they would themselves be offered up as a mass sacrifice before their crews and the higher commander could acquire a new habit of applying mobility freely.

Moreover, another aspect of peace-time exercises deserves emphasis. Because this executive acts and umpiring decisions are made under artificial conditions, any deduction from them, especially in detail, is largely a matter of individual opinion, of guess work even. Thus it runs more risk of missing truth than does an analytical pursuit of general tendencies and effects. History attests this. Lessons learned from peace exercises have, indeed, far more often proved false than those of pure theory developed from logical reasoning and historical analysis.

It would be unfair, however, to argue that the past season's practice yielded no value. A number of points were certainly brought out by actual experience as they could not have been so well in any other way. One was the relative increase of mechanical endurance. This is the more significant because the machines have been growing older, and so inherently more liable to breakdown. The fact that increase of age has been accompanied by a decrease of casualties, despite an acceleration of marching pace, is a tribute to training. And it is a vindication of those who argued that it was unwise to base calculations on early performances, who prophesied that as commanders became more mechanically understanding, and their men more mechanically trained, standards would rise and difficulties grow less.

There was an illuminating illustration of this truth, and of the difference made by experience, in one exercise. A light tank company commanded by an officer who had enjoyed three years' experience in handling these machines attained a remarkably high average pace without incurring casualties, whereas another company under an officer who had just come fresh to the task suffered numerous casualties although moving at barely half the former's average. Of the general improvement there has been recently an even more striking example in Egypt, where five medium tanks

travelled 130 miles across the desert from Cairo to Alexandria in 30 hours, and eventually, after taking part in exercises, returned to their base through a sandstorm that stopped all other forms of transport. They had covered 320 miles within a period of six days.

Among other mechanical impressions of the season has been that of a marked improvement in the work of the armored cars, and also of the remarkable influence they have sometimes exerted on the opposing command, an influence not perhaps consciously appreciated, yet none the less dominating. Another significant reflection concerns the visibility of the various arms. One often feels that it is a pity that practical tests of comparative visibility, both for means of movement and formations, are not carried out. A medium tank, for example, can be easily mistaken, particularly on a misty morning, for a clump of bushes. And on most types of ground the visibility of a Carden-Loyd light tank is much less than that of a man on a horse, and of several Carden-Loyds astonishingly less than that of several men on horseback. The former not only merge with the background more easily, but attract the eye less in movement. Unfortunately, by a peculiar absurdity, this asset was dissipated by decorating the tiny machines with red and white distinguishing signs of disproportionate size.

This "advertisement" at least helped to mitigate a danger to the infantry which was significantly emphasized this year by the attempts to protect the march of an infantry column with antitank guns. Against a mobile opponent their own peril might outweigh their value. For they can so easily be "netted" by light tanks or cavalry patrols—cavalrymen either horsed or mechanized. Such mobile adversaries may catch them unawares from a close-up fire position or, alternatively, dismount and stalk them on foot. Thereby an infantry force which relies on antitank guns to picket its march might be stripped of protection without becoming aware of its nakedness.

This consideration brings us to the question of cavalry, a question that is the more difficult because cavalry has become so mechanical with Austin reconnaissance cars, Carden-Loyds, and sixwheelers, that it might almost be termed a framework of steel with merely a filling of horse-flesh. Viewed logically, such an amalgam would seem to have the defects that a compromise always has in war. If old style cavalry has still a role, it should remain horsed; otherwise, it should be mechanically converted to war style cavalry. I imagine that those who are really convinced of the horsemen's value would prefer to stand on their own hoofs. Then at least they would be able to prove whether they could move and fight where mechanised troops could not.

But one finds more and more, that cavalrymen recognized that their fighting days are over; ended by their own excessive vulnerability to modern fire weapons. The argument for their retention seems to focus purely on their value in reconnaissance and on their short-range power to move over certain tracts



On Left, One of the New Mechanised 3.7-inch Howitzers. On Right, Mechanised Machine Gun Carrier and Trailer. The Gun Has Been Dismounted and is Firing from the Top of the Slope

of ground where vehicles are "stymied." In this case it seems that the most reasonable way of assessing the issue would be mathematically. The value of information depends first on its exactness and secondly on the quickness with which it is gained and got back. Which is quicker to travel nine and three-fourth miles on a horse and one-four mile on foot, or to travel nine and one-half miles in a swift machine and one-half mile on foot? The answer is unmistakeable, and the conclusion surely unanswerable. And it is well to remember that as the range of a reconnaissance increases, so does the advantage of the swifter moving means of transport—to the point where the final stage must be made on foot.

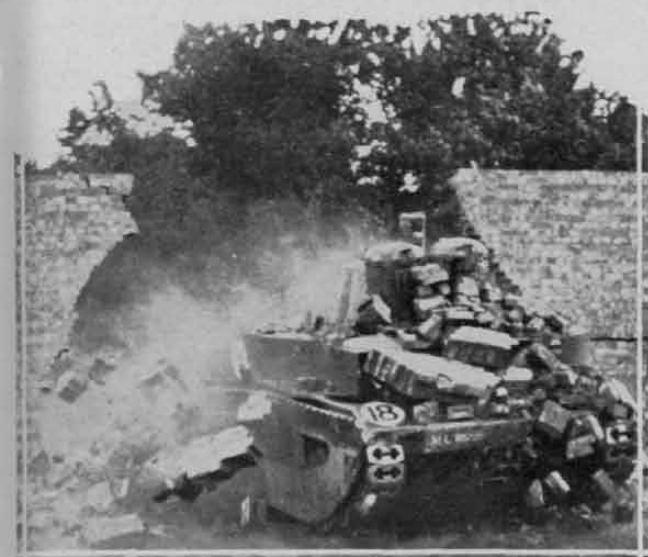
It is characteristic of human nature to shrink from pitiless logic, and characteristic also to cling to an old friend which may have an occasional value for an exceptional purpose. But even if we concede the fullest claim now made by enthusiasts for the horse, it is clear, indeed all the clearer, that we do not need large units of horsed cavalry, but merely a few score picked men in each division to furnish patrols.

The best excuse, though not a reasonable justification, for maintaining cavalry brigades is that they provide practice for leaders in applying mobility. A younger generation is likely to arise, bred up with mechanised vehicles, who will be imbued with mobility of thought and action. But as present it is unhappily obvious that few commanders have been able to shake off trench-warfare deliberation. Some commanders have a natural gift for mobility, or in their war service missed the danger of developing immobility. But, otherwise, cavalry-bred commanders seem the most free.

In this year's exercises realism was obscured, and

the broader issues confused by misdirection of the "armored" strokes. One is not referring merely to the neglect of strategic objectives, such as communications and depots. This potential aim is certainly underrated, because British soldiers know too much about that rather overrated cavalry leader "Jeb" Stuart, and far too little about the effect achieved by Forrest and Morgan. The "romance" of Stonewall Jackson has blinded them to the deeper lessons of the campaign in the West, where Grant turned and Sherman decided the issue of the Civil War, and where the exiguous mobile forces of Forrest and Morgan went far closer than the main Confederate armies to frustrating their purpose.

Even so, mobile forces must often aid the general plan by closer action against tactical objectives. But these should be apt targets. Unfortunately, in peace exercises much unreality exists and false lessons are drawn because the administrative services, the second-line transport, and the various headquarters have such puny proportions compared with their war scale. They are peculiarly difficult to cover against the thrusts of armored mobility, but because they are small in peace exercises, they are difficult to strike and their assailants are rarely accorded full and real value for striking at them. Perhaps this is the reason why, instead of striking at the enemy's immediate rear, the armored units are still habitually aimed at a front which he has had time to prepare for antitank defense. An armored brigade should be given full latitude to avoid the enemy's antitank defenses. Its line of approach should be as indirect as possible—and mobility gives it a wide range of possibility. A blow at the enemy's headquarters, signal centers, transport lines, and supply columns, would be likely to paralyse all the combatant



The Largest Type of Medium Tank (16-ton) Going Through a Brick Wall. The Speed on Fairly Level Ground is 30 Miles Per Hour

troops that are dependent on those vital organs. In contrast, infantry disposed and dispersed for defense is a difficult target to hit—although in actual war it might not stand the sight of an oncoming swarm of modern high speed tanks.

Again, the habit of launching tanks, or keeping them to launch, at the enemy's tanks is an unconscious tribute to the power of armored fighting vehicles, a proof of the instinctive fear they increasingly develop in the minds of commanders. But it is not generalship. A general should employ his tools in the way that produces the maximum profit, not merely to cancel his opponent's assets.

Moreover, this direct use, and misuse, of tanks not only confuses the essential issues of today, but confuses the battle picture. Thus it confounds umpiring and makes peace exercises more than ever unrealistic. Mr. Rudyard Kipling was present at one of the exercises on Salisbury Plain, and the story is going round that he was asked his impression of modern war as there presented. He is said to have replied: "It smells like a garage, and looks like a circus." An apt and witty mot, and the circus element was certainly prominent on the "battlefield" as well as on the road. But it was due mainly to misguided choice of objectives, and the tendency to seek in unreal battle what could have been better attained by indirect paralysis.

Of course the misuse of tanks may be read as a tacit admission of their potency, a recognition that a battle without them is unthinkable, and that the other arms without them are powerless. It is a backhanded compliment. Because they are so few in proportion to the infantry, and yet so essential, they are called upon disproportionately. The infantry are often saved loss and exertion by their very immobility; the cavalry by their vulnerability, and because all soldiers are horse-lovers, and so, when in command, gauge generously the needs of the horse for rest and water. In contrast, and in paradox, the less they value machines the more

do they commonly expect of them. This tendency entails not only undue wear and tear, but tactical waste. We have come to count on tanks out of all proportion to the number that we can count in our present organization.

Gropingly, yet definitely, the British army has taken a lead in mechanisation. By comparison with other armies its situation is favorable. By comparison, however, with the need, its state is not merely unsatisfying, but unready. All armies have made more progress in the past decade than in any previous decade of peace. Yet, relatively to the changed conditions, the change is less than it has ever been. And so is utterly inadequate. Armies as at present are not an insurance; they are a petition in bankruptcy.

Expressed mathematically, change in armies has usually moved at the same pace as change in the conditions of war, but several marches in rear. In the last decade the pace of armies has quickened to a run. But the pace of scientific and mechanical progress has been revolutionised, not merely accelerated. Thereby the armies of today are as helpless and their prospects as hopeless, as a portly policeman trying to catch a motorthief—the thief of time.

The consequences may be even more simply expressed. The armies of 1914 had over two months of grace before they lapsed into the stagnation of trench warfare. Nowadays the proportion of machine guns and other automatic firearms has increased enormously. No army has any scale of artillery approaching the proportion which in the later stages of the war could make a gradual advance possible by plastering whole areas with shells. The number of serviceable tanks is but a trifle of the infantry strength of any army. As the habit is still to use them for bolstering up the infantry, and so to throw them against the positions best furnished with counter means, the existing few would soon be used up.

It is thus a safe deduction, and prediction, that the armies of today would sink into trenches within a week—if they ever got to grips. For there is more than a possibility that these infantry bodies would be dispersed by air attack or hamstrung by the bombing of their transport while they were still groping forward.

Six years ago I produced a little book called "Paris, or the Future of War." Since then I have dwelt mainly on the immediate future of armies and on the ways of modernizing them. Some have assumed that this shortening of the horizon meant that "Paris" was merely a bomb to liberate thought, or an indulgence in extreme vision as a refreshing prelude to more practical concerns. On the contrary, the more one meditates on the increasing data provided by war history and peace exercises, the more sure do the original conclusions seem. They even sound less extreme than then, so marked has been the change in general military opinion.

This change owes as much to the cumulative effect on annual maneuver impressions as to the gradual surrender of prejudice to logic. Every effort has been

made to prop up the infantry, and to ensure them a rôle befitting their normal dignity as the principal arm. Yet their attempt to simulate virility has been no more convincing than that of the "principal boy" in a pantomime. They have been endowed with green and white flags to represent antitank guns and these most versatile weapons have been allowed to score a percentage of hits such as no weapon has ever approached under war conditions. They might well be christened the "Marksman's Dream." On the other hand, the tanks have been heavily handicapped by the narrowness and artificiality of maneuver areas, by their own fewness and obsolescence, and not least by the way commanders have employed them—too often to the negation of their mobility.

Yet infantry padding and tank slimming have alike failed to disguise the natural outlines of these trials. In exercise after exercise the tank forces, so slender compared with the infantry bulk, have dominated the situation. Dominated it more each year, and most of all this year.

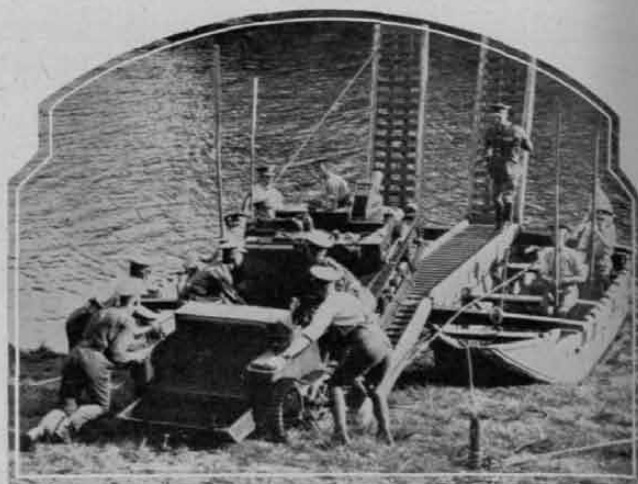
It is not merely by their mobility, for this has been restricted, that their influence has been exerted, but their subtle moral effect. Any commander of a large infantry force who knows that the other side has a small armored force is subject to this. All his ideas and movements are governed by his concern as to its whereabouts and its latent menace. It cramps him at every turn, and he is compelled to take such care for his own security that his offensive purpose becomes a secondary and flickering impulse. It is often amusing to see those who have been most disparaging of mechanisation become most concerned when they have to command.

If the self-protective instinct become so predominant in peace, it is likely to spell paralysis in war. No commander will ever feel safe in executing a plan. If he is about to take the offensive, and hears of a hostile armored force in the offing, what will be the effect on his purpose? If he has actually begun an attack, will he continue it? Perhaps it would be not all loss if his resolution falters, for, as we have already pointed out, there is not the least ground for expecting that an infantry attack could succeed against a modern enemy in a position that he has had a few hours to prepare.

Thus the problem of today is not merely what tanks can do, but what mental and moral effect they can have. And here lies the ground for declaring that talk about "gradual mechanisation" is merely a soothing syrup, which though innocuous in itself, is indirectly perilous to administer to a grave case. The need for thorough conversion is urgent. And if anything could accentuate its urgency it is the knowledge of the vulnerability of all unarmored columns to air attack.

The significance and effect of the bombing attacks on bus columns was clear to any reflective mind. In many cases, such a mobile column would probably have remained as an immobile heap of wreckage, far behind the place where and time when it was wanted. Marching columns may be less easily blocked than bus

columns, but are more easily dispersed—an equally powerful brake on effective advance. Only when using pure armored formations is this danger lessened.



One of the New British Mechanised 3-inch Stokes Mortars, With Trailer, Being Rafted Across a River

Otherwise, the commander's strategic plan may suffer a paralytic stroke.

Let us, however, for the sake of argument take up the most moderate ground, and concede the claims, whether logical or not, made for the preservation of the other arms. On this basis, and in the light of this year's exercises, let us put a simple question. If any commander who took part was offered a division comprising the usual three infantry brigades or one comprising one infantry brigade and one armored brigade—which would he choose? One cannot believe that even the most conservative general would still prefer the former if he had to bear the responsibility of command. And if this be the conclusion from Salisbury Plain and Aldershot, how much stronger would it be in a theatre of war where there were no red patches or inviolate fences to cover his flanks, and where he could not so easily gauge the whereabouts and approach of an enemy armored brigade?

Hence what justification is there for preserving even for a time the present infantry pattern of divisions? Once we have read the writing on the wall, it does not diminish the danger to remain gazing at the wall.

Only perhaps at one point can one detect a silver lining to the cloud that hangs overhead. It is in the cultivation of generalship. For the first time since the era of Waterloo, continental armies have their eyes on the British and are being influenced by its experimental lead. The pre-war army, splendidly efficient as it was in many ways, did not draw such a tribute.

While British pioneering work in mechanisation is generally realized, it may seem more surprising to refer thus to its generalship. I was greatly struck by the remark of an acute-minded foreign attache that its exercises contrast with those abroad in the scope they give for strategy—particularly in its original sense of "the art of the general." Relatively, this is true, even though one deplores the limitations of ground, the limitations of the administrative services which

are the bases of strategy, and the excessively tactical outlook of the manuals. But looking back, one can see how we have progressed. A few years ago most schemes dealt with forces which were acting "encadré"—fighting side by side in a series of narrow compartments. These reduced the commander to the level of a machine-tender instead of an artist.

This year nearly all schemes, whether they dealt with battalions or divisions, were revised to encourage free maneuver and strategic judgment. Superficially it may seem a paradox that mechanisation should be making war less mechanical. But its effect is perfectly natural. For by restoring mobility and fluidity it is breaking the shackles of trench warfare, the most mind-deadening form of war. The new freedom given by mechanical power of movement, combined with unmechanical schemes, must ultimately bear fruit, however depressing the uniform dead level of execution in many of this year's exercises.

Where there is scope for the art of war there is hope that this art will revive.

It is still a question of hope, rather than fulfillment. This year, as each year, one has seen the same familiar mistakes. One does not refer to, nor would one lay stress on, mistakes of execution. These are inevitable, and the critic should be charitable, if he appreciates the fog of war. But errors of conception are in a different category, especially where they come from a disregard of time-proved essentials. This year one has again seen commanders following a preconceived idea as rigidly as the commanders of 1914, with no attempt to give their plan and dispositions the elasticity which would allow them to be varied to meet the enemy's action. One has seen them neglect the chance of taking alternative objectives even when the scheme provided this essential chance of perplexing their opponent. One has seen them launch attacks which could

have no possible hope of success even in the light of their limited information, lunging at the point where the opponent could surely parry.

Perhaps the most significant defect lies in the normal appreciation. Never does this seem to consider what course would be the least likely to be expected. "Soundness" is our bugbear, and our mental burden. It is well known that Moltke in 1870 jeopardized his success by giving his opponents credit for taking the sound course, the plan that he would himself have adopted in their position. Because the French were outrageously foolish, they badly upset his calculations. This might seem an argument for foolishness in a general, if it were not for the fact that, being foolish, they were unable to take advantage of his miscalculations. But one fears that in most present commanders Moltke would have found his ideal opponents. For he could have relied on them always to do the sound thing, so that they would have fitted perfectly into his plan—for their defeat.

In the nineteenth century a cloud spread over the armies of Europe and has lain over them since. Like a sound-proof curtain it shut out the still small voice of the old masters. Like a smoke-cloud it might have been patterned to spell the catchwords "Soundness" and "Uniformity." Inverting the order of nature, that cloud is the cause of the general depression which lies over Europe today. For the ruinous drain of the last war can be traced to the futility of armies which, since 1870, had become mechanical in mind without being sufficiently mechanical in form.

No wonder it is declared that another such war would mean the bankruptcy of Europe. If so, it would be due to the bankruptcy of intelligence. At present there are portents of recovery; hardly the promise, still less the achievement.

Reviews of Foreign Military Writings

France, 1923

THE DEFENSE OF IVANGOROD, 1914-1915. (Translation from the Russian).

General Alexis von Schwarz.

The book is a translation from the Russian. General Alexis von Schwarz of the Imperial Russian Army, is a noted authority on the subject of field fortifications, and during the World War he was governor of Ivangorod.

The book gives in detail a description of the important Russian fortress which included both banks of the Vistula River. The siege operations of the Germans and the defense measures of the Russians are discussed in a very complete and interesting manner by an author who combines both theory and practice.

Industry and National Defense

Major General George Van Horn Moseley, U. S. A.

II¹

WHEN the United States declared war on April 6, 1917, the authorities realized that a great task lay ahead in organizing the country to support our military effort. Many people were willing, but few were competent, to advise the President what to do. Our fixed determination during the first years of the European war to remain neutral, had been carried to the point of restraining us from making any reasonable preparations, of either a military or an industrial nature. When we found ourselves thrust suddenly into the war, army, navy and other authorities began to estimate our needs, and civilians sought ways and means of supplying these needs.

In an attempt to meet the difficulties which immediately made themselves felt, man after man was called to Washington and board after board was established. Each seemed only to add to the general confusion and, after finding itself powerless to make any progress in the task, usually was succeeded by another equally ineffective board. The long list of committees, boards, and councils formed at the seat of government during the year 1917, is evidence of the confusion which existed in the field of munition production. It would be gross injustice to belittle the accomplishments during this period of the many able men connected with the munition program. What men could do under the existing circumstances, they did. The difficulty lay in the fact that, at that time, in the field of industrial mobilization we were amateurs, further handicapped by our abiding faith in the efficacy of individual endeavor as opposed to governmentally coordinated industrial organizations.

Huge orders for supplies were placed without regard to the possibility of procuring the necessary raw materials and with even less regard for further and possibly more pressing needs of the nation. Prices sky-rocketed to dizzy heights as a result of indiscriminate buying, and industrial organizations received conflicting orders from various purchasing agents of the Government. Although it was early perceived that we were drifting into a condition of industrial chaos, it was difficult, even with the support and cooperation of all classes of citizens, to evolve an effective plan of action. The various steps that finally placed our industrial effort on a reasonably sound basis were taken slowly and tediously. They included the establishment of a civilian organization in Washington which, by virtue of the powers delegated to it by the President and conceded to it by industry itself, was able to centralize and unify the industrial effort of the country. Much effective work was eventually accomplished, both

in the production of war munitions and in other uses of the economic resources to further the nation's best interests. Throughout the war we continued to ship great quantities of raw materials to the Allies, and many of our factories were continuously engaged in producing important items of equipment for them. However, though we entered the war as the leading industrial nation of the world, and were actively engaged for nineteen months, not one American-made tank was ever used on the battle front, and not until the Armistice had the most essential types of artillery shells reached quantity production. Such a delay in the future might, under different circumstances, have the most serious consequences for our country.

If industry is to meet the demands made upon it in war, and if the material resources of the country are to be properly organized, it is now generally recognized that they must be subject to the direction of one supreme head who will be responsible for the unified application of the power they develop. Such a conception of business methods is entirely foreign to the prevailing peace-time practice in our country.

The development of American industry in the last century has been accomplished under a doctrine of free competition, which permitted full exploitation of our national characteristics of self-reliance and initiative. The Government has wisely refrained as far as practicable from interfering with the fundamental laws of supply and demand. Governmental control has been limited, in theory, to that necessary to preserve free competition, and to prevent injustice to the mass of our citizens. The trite saying, "The more business in government, the less government in business," expresses epigrammatically the philosophy of our people respecting the individual's control over his own capital and his own efforts.

In war all this changes. Demand becomes not only abnormal but is measured in terms of national self-preservation rather than in capacity to pay. Time is vital. The interests of the individual must be wholly subordinated to the interests of the nation. Supplies must be obtained regardless of expense and effort. To avoid collapse and chaos, the government must assume control. Prompt action will be necessary, but snap judgment decisions should not direct this action. Efficiency can result only from study, from knowledge, and from deliberate preparation.

The board which finally supervised and controlled our industrial organization in the last war was headed by Bernard M. Baruch. In his final report on the activities of the board, submitted to the President in March, 1921, he stated :

(¹) The second article of this important series.

That much of the confusion experienced in collecting the supplies for this war could have been avoided by a more painstaking, thorough, and comprehensive effort on the part of the Government supply bureaus to work out a program of redoubt, even a program tentative in many of its details, there is little doubt. That such a program would have been exceedingly difficult to frame is quite certain.

"The experience of the board in this respect suggests the thought that there should be established a large unit of specially qualified officers of the War Department devoted in time of peace to studies of supply programs for supposititious military undertakings. As these programs would always have to be based upon the obtainability of the supplies outlined, the bureau should be required to go deeply into a study of the industrial resources and possibilities of the country as they relate to war needs. These studies are a military function, but they might have also, as a by-product, a healthy effect upon business."

The essentials of Mr. Baruch's recommendations were incorporated into law by Congress in 1920. The National Defense Act of that year places on the War Department the duty of assuring adequate provision for the mobilization of the national resources essential to war-time needs. The peace-time studies and plans which Mr. Baruch visualized are now demanding the constant efforts of a small group of specially selected officers who receive the voluntary assistance of experienced civilians.

It is necessary to make in peace reasonable estimates of the amounts of munitions essential for war, and they must be listed according to importance. Moreover, in peace we must plan for the distribution of war-time production to the various sections of the country in proportion to the productive capacity of each. It must be assumed, of course, that in war Congress will give the necessary directives which will enable the Executive to accomplish the 'scientific application of the industrial forces.' The necessary requirements in labor, raw materials, facilities, power, fuel, and finance must be foreseen and provided for in detail. Where there promises to be a shortage in any of these, plans must provide for curtailment of certain industries in order to favor those whose activities are vital to the country's needs. There must be no interference during an emergency with the production of essentials for the civilian population. Plans for war-time control of prices must be reasonable, workable, and just. Finally, there must be sound plans for the control

of the whole economic war effort through providing for a centralized organization of manufacturers, financiers, miners, farmers, labor leaders, lawyers, doctors, and in fact representatives of every part of our economic life.

Such preparatory work is merely to place our national house in order. It requires little expenditure from the public funds, and the most extreme advocate of total disarmament could scarcely make objection to its consummation. It indicates no attitude on our part unfriendly to any other government. In fact, it indicates nothing more than our determination to avoid the waste and inefficiency that have throughout our history characterized our initial industrial efforts in national emergencies. It seeks merely to apply sane business methods to government business in war, so that every individual will carry his share of the burden and the government will obtain one hundred cents of efficiency for every dollar spent.

Progress in the task is steady, even if slow. Its execution is made possible only by the hearty cooperation of all classes of citizens with the officers of the government. Happily, the modern American has exhibited a patriotism and interest in his nation's welfare which does not limit him to outbursts of wild enthusiasm when the enemy is actually at the gates, but impels him equally to participate in the humdrum work of peace, in order to assure the continued prosperity and security of his country. The work so far done gives reasonable assurance that never again will we have to go through the industrial nightmare of 1917; if we were attacked tomorrow, the work already accomplished would place us far ahead of where we were on April 6, 1917.

The solution before 1917 of the problems I have outlined, would certainly have had marked effect on our war effort. As to the lives it might have saved, and how much it would have hastened the final victory, one man's guess is as good as another's. Certainly it would have reduced the risks we took in entering a great war with scarcely an idea of how to equip and supply our armed forces. Today, we would be paying interest on a much smaller national debt. The most conservative authorities estimate that war expenditures under the assumed conditions would have been twenty-five per cent—about five billion dollars—less than they actually were. Plans that give reasonable promise of effecting such savings to American taxpayers, are worthy of the most serious consideration.

Troops of Mounted Organizations to be Issued Laced Boots

The Secretary of War has directed the issue of laced boots to enlisted men of mounted organizations as a part of the clothing allowance, effective July 1, 1931. Priority of issue will be given troops in the United States.

Hawaii Nei

Lieutenant G. A. Hadsell, Coast Artillery Corps

TAKING text from Rudyard Kipling, "For to admire an' for to see," it is the purpose of this paper to present a brief review, chiefly visual, of Hawaii Nei, Beautiful Hawaii. And since the military is most concerned with the island of Oahu, upon which are situated Honolulu and Schofield Barracks, it is Oahu which will principally occupy our attention.

It is our first duty to investigate the rainbow-tinted scenes presented to lure tourists to this "Paradise of the Pacific." The officer with orders to join wants to know whether or not the picture is overpainted. Though drawn by the romance of far countries beyond the sea, he views with grave suspicion references to eating delicious native *poi* from a calabash by moonlight on a palm-fringed shore, while dusky maidens sway in rhythmic *hula* to the throb of gourd drums and the beat of surf at Waikiki.

If Hawaii's claim to earthly paradise must rest on *poi*, then romance is doomed. For with this starchy concoction of mashed taro root, only the bold will dally beyond the experimental stage. The historic place of taro along with the cocoanut, pandanus, breadfruit, and yam, in the struggle for existence of the old time Kanakas, will not soothe the qualms of the modern digestive apparatus.

Fortunately, however, the case of Hawaii Nei (Hawaii the Beautiful) rests also with her volcano, Kilauea, her snow peaks, Mauna Loa and Mauna Kea, and the gigantic ancient crater of Haleakala. It rests also on the lush green foliage of her rugged mountains, on headlands of black lava washed by the bluest of oceans, on beaches blazing white in tropical sun. And even the most skeptical must concede palms, moonlight, and surf at Waikiki.

Hawaii's history is also not without glamor. On the exact origin of the brown-skinned peoples called Polynesians whom the British Captain Cook found here in 1778, authorities do not agree. However it is supposed that their remote ancestors came from Tahiti, Samoa, and the Marquesas, voyages in outrigger canoes which would shame Columbus into obscurity.

Furs from the American Northwest for the China trade first made these islands important to European and Yankee ship skippers. Here the long sea trek to the orient was pleasantly broken and necessary water and provisions were stocked. Later a Captain Kendrick of a brig out of Boston contracted for several cargoes of sandalwood from the island of Kauai. This rich trade, also with China, started Hawaii toward modern civilization. But by 1819, the year of the death of King Kamehameha, a chieftain who succeeded in bringing all the islands under one rule, the native sandalwood was beginning to be exhausted.

About 1820 missionaries from Boston and Yankee whaling ships descended on these islands almost simultaneously. The missionaries converted Hawaiian royalty and gradually extended their influence by schools and good works. They succeeded also in curbing to a certain extent the boisterousness of the whaling skippers and crews. The whaling industry, however, was responsible for great prosperity in the middle of the nineteenth century. Often more than a hundred sailing vessels, and some times a hundred and fifty, crowded Honolulu harbor.

From the beginning American influence was strong, and while sailors and missionaries often disagreed violently, they early veered Hawaii toward the United States. The discovery of petroleum to take the place of sperm oil in 1859, and then the American Civil War, caused the whaling industry to languish. Later, however, occurred an influx of American capital and profitable commerce of the sugar planters with our Pacific Coast. Then in the year of the war with Spain, the Hawaiian Islands were formally annexed to the United States.

But to return to our skeptic officer, Honolulu bound, we find his appetite and interest in the future quickened now that the choppy seas off Golden Gate are well astern. He scans the chart of Pacific islands and notes Honolulu about twenty degrees above the equator, nearly opposite Yucatan in Mexico and Hongkong in China. His sleep the last night out may be troubled by fancied pronunciations of the seven largest islands, from northwest to southeast, Kauai, Oahu, Molokai, Lanai, Maui, Kahoolawe, and Hawaii. But on learning that early chronicles called Oahu, "Woa-



Oahu Landmark, Diamond Head from Waikiki

hoo," and Honolulu, "Hanaroorah," he may feel better.

Soon after dawn as the transport bow startles the day's first squadrons of flying fish, the misty mountains of Molokai loom off the port rail. A few minutes

later green cliffs of windward Oahu and rocks of Makapu Point rise from the sea on the opposite side. The ship glides past weathered and arid Koko Crater and Koko Head. Then tawny Diamond Head is rounded and Honolulu of turbulent history in the days of sandalwood and whaling ships lies peaceful in her mantle of trees against the background of green mountains.

Near Diamond Head white combers roll up Waikiki and palms of what was once a royal grove for princely diversion cluster around two huge hotels. Directly ahead in the inner harbor is a semicircle of shipping from the seven seas. And as the transport noses into Pier Five the band on the dock below plays Aloha Oe. Friends are waiting with flower leis to bedeck the incoming passengers.

From the ship Honolulu appears to occupy a narrow strip along the shore. The rugged green ridges of the Koolau Mountains seem to crowd the city into the sea. The business district and the shops which strongly suggest the Orient as well as the South Seas are but a block or so from the waterfront. But, as much of



A Beach on the North Shore

Hawaii's wealth depends on the sea borne traffic, this is not surprising.

Upon closer inspection it is apparent that this metropolis of the mid-Pacific covers an extensive area. From Red Hill on the northwest to the Kaimuki district behind Diamond Head a blanket of tropical foliage conceals its size. Flame trees, golden shower, red hibiscus, and purple bougainvillea blaze in a riot of color. Palms, monkey pod trees, and banyans help to hide the city's roofs. Residential streets split around Punchbowl, an ancient crater, and reach into the deep mountain valleys.

Driving through the city streets the *malihini*, or newcomer, is perhaps disappointed at the evidence of twentieth century modernity. Panamas and "Palm Beach" suits and the latest mainland fashions have displaced feather cloaks and grass skirts. If further proof of up-to-dateness is required, it may be mentioned that in Honolulu Town, once famed for sailors' revels and the barbaric hula, there are more than twenty "wee golf" courses.

Native Hawaiians are not as conspicuous as might be imagined. Waikiki beach boys, of course, and the big Kanaka cops present no difficulties in identification.



Varieties of Palms Near Honolulu

Lei women at the steamers and workmen with flower wreaths around their hats are easily picked out. Not so easily recognized as members of this genial race are the many city and county officials and the large, portly individuals who step from limousines on Fort Street.

The large oriental element presents a surprise. Driving along North King Street in the direction of Schofield Barracks, crowds with almond eyes, whose faces bear the stamp of the Land of the Dragon and of the Empire of the Rising Sun, throng the sidewalks. Chinese and Japanese form large racial groups. Filipinos are second in numbers only to the Japanese.

Explanation for the many malays and orientals lies in the labor needs of the huge plantations. No machine yet invented can cope with the task of harvesting tangled sugar cane. Hence as early as 1852, due to the decrease in the native population, about two hundred coolies were brought from Hongkong, China. When, later, the Chinese were attracted from the plantations to commerce, Japanese were imported. And now the Philippines have become a source for workers in the fields.

The Schofield Road, called Kamehameha Highway after a famous native king, leaves the city and plunges into dank tropical verdure. It twists through thickets of *algaroba*, cousin to the *mesquite* of the American Southwest, to the top of Red Hill. Here as the car swoops down-grade a panorama spreads.

For miles green seas of sugar cane extend. Aiea Mill, Ewa, and Waipahu are islands in this ocean of jade. The three shining lochs of Pearl Harbor break this monotone of color on the left, and on the right row after row of pineapple plants grow across the foothills of the Koolau Range. Cloud capped peaks of the Waianae Mountains form the backdrop.

Schofield Barracks is situated on the high Leilehua Plateau just below Kolekole Pass of the Waianae chain.

It is a little more than twenty miles from Honolulu and due to its height is several degrees cooler. Incidentally, while Hawaii's climate comes close to perfection, the comfort of blankets and woolen clothing during cold nights in the rainy season is no tropic dream.

After passing the town of Aiea the Schofield Road runs close to Pearl Harbor. The highway twists and turns as if its builders planned to pass every habitation in rural Oahu. Generally speaking, it climbs, through descents to gulch bottoms add variety and thrills as well. The sugar cane of the lowlands gives way to pineapple plantations in the red dirt for which Schofield is famous. Finally, as the rim of the second of two deep gulches is reached, the concrete barracks of the Post are in view.

It is not within our present scope to dwell upon the details of military life at this large garrison. However the pleasant contacts with officers of the Infantry and our other arms and services prove most valuable. Merely to take part in a division review is a visual lesson worth many text books.

Recreational facilities are here developed to their



One of the Many Gulches

fullest extent. Hawaiian football may sound as outlandish as the *hula* on the Boston Common, but when regimental rivals meet, the bands play, banners wave, and everyone turns out. Considering the numbers that attend, boxing is perhaps the most popular sport. On "fight nights" the bowl whose capacity is ten thousand people, is jammed. In all sports competition is of the keenest.

Individual sports such as golf and tennis are enjoyed without regard to season. In the upper Post the fairways almost in the shadow of Mount Kaala have their unfailing devotees. Tennis courts in the regimental areas are rarely deserted.

For the "horsey" gentry there are polo and the Schofield Riding Club. Rides through the deep gulches, the pineapple fields, and the guava thickets of the uplands are well attended. In the Spring the Division Horse Show is an outstanding event.

The universal diversion, however, is ocean bathing. On warm afternoons the hill road down to Waialua

and Haleiwa on the north shore carries a peak load. The twenty-foot combers that roll in at Nanakuli tempt many, though they are dangerous for indifferent swimmers. Army members are among the crowds that acquire sun tan at Waikiki. And many take the



The Koolau Range from Waikiki

Nuuanu Valley Road over the Pali cliff to swim at Kailua on the windward shore.

In a tour of Hawaiian duty many officers visit other islands in the group. A few testify to the beauties of Kauai, the "Garden Island;" and some to the wonder of the huge crater at Maui, Haleakala, ten thousand feet above the sea and twenty miles around its rim. Most officers visit the fire pit of world famous Kilauea on the island of Hawaii. On this island also rise the majestic peaks of Mauna Kea and Mauna Loa.

Returning to our skeptic's doubts of Paradise at this cross roads of the world, we fall back on the accepted doctrine, "It all depends on the terrain," and claim that in piling up these rocks of coral and lava the Creator left little ground for complaint. It also may be argued that Hawaii's tourist trade ranks next in importance to the profitable sugar and pineapple industries.

Of the enchantment of these islands, each, of course, must form his own opinion. Here are rainbows in



Palolo Valley in the Koolau Range

the sky, sunsets in the sea, and palms outlined black in silver moonlight. And while in the serious business of living these things hold secondary rank, yet they add to the intangible satisfactions of life.

Practical Peace-Time Leadership

The "Case Method" Applied to an All-Important Phase of Military Education

Major O. W. Griswold, Infantry

LEADERSHIP can not be learned from a set of rules. However similar soldiers may be in the mass, individually each man has a distinct personality. In battle, in the face of danger and death, the soldier is stripped of all superficial attributes and reverts to the elemental man. The herd influence then becomes predominant. He ceases to think, and then reacts, as a matter of habit, to the things learned on the training ground.

In peace, such factors as education, previous occupation, race, antecedents, and home training make soldiers more individualistic. There is not present that common danger, as in war, to bring them all together. In peace, too, the application of disciplinary measures to suit the particular case may be efficacious as a deterrent. But in battle no disciplinary punishment, less than death itself, will affect any man who is crazed by fear.

The lives of Napoleon, Scipio, Hannibal, Caesar, Grant, Lee, Stonewall Jackson, and many other great soldiers abound in glorious exploits of leadership on the battle field. Conversely, the student may also find in history many notable examples of its failure. Unfortunately, however, there are few examples in print concerning the practical application of leadership in time of peace. Therefore, and since it is in peace that we should prepare for war, this study concerns itself more with the peace-time aspect of the question.

The following true cases, illustrating some examples of peace-time leadership, are stated from an observation of some twenty-four years' service. They are stated, not in a spirit of criticism or commendation, but in an effort to illustrate what are considered to be certain fundamental principles that underlie the application of peace-time leadership.

Case I. Some years ago, the graduating class at West Point was given opportunity, as a part of its instruction, to witness the usual Saturday inspection of one of the Regular Army detachments at that station. The detachment commander's attitude towards the men was one of extreme severity and faultfinding; any bunk not made up to his satisfaction was pulled roughly apart, and the blankets, sheets, and equipment were scattered upon the floor; noncommissioned officers, as well as privates, were admonished caustically and sarcastically before the assembled cadets; meat cans, knives, forks, and spoons, out of place or in poor condition, were thrown across the room; and several times the detachment commander lost his temper and used profanity. He seemed to take pleasure in finding something wrong, and failed to comment favorably on anything that was right.

The impression made on that graduating class was impressive and lasting. To their inexperienced eyes

this was the approved way to handle enlisted men. Needless to say, every potential officer in that class was greatly handicapped during the formative years of his earlier service by the experience. It took years for some of them to readjust their ideas. This influence may have caused some of the storm of post war protest against Regular Army methods.

This case illustrates many serious errors in the psychology of troop leadership. First of all, it is an almost criminal illustration of the power of example wrongfully applied. Secondly, it violates every semblance of dignity, justice, and good practice in the handling of enlisted men. Such treatment lowers their self-respect and exposes them to ridicule. It is unjust and arbitrary. It destroys loyalty and respect for the commander, the organization, and the entire Service. Finally, the tyrannical imposition of authority on subordinates by virtue of military command can never be defended. It is the act of a bully, not that of a leader.

Conversely, analysis of the case by the observant officer will guide him to a fundamental truth, which is that in most situations commendation is more powerful than condemnation. Applied to the case in point, it means that the detachment commander's mental attitude was destructive rather than constructive.

In making an inspection, then, the best method is to find first something satisfactory. Having once found it, make favorable comment thereon. Then point out carefully the unsatisfactory things, emphasizing the idea, at the same time, that only these latter things are holding back the individual or the organization from being uniformly up to the approved standard. Instead of arbitrarily ordering "do this" or "do that," the initiative of the subordinate can be stimulated by such questions as "What do you think about this?" "Have you considered that?" leaving him the working out of the suggestion. The senior has a direct responsibility in checking up on results. This course will almost always bring home to the subordinate that the senior is a friend, not an enemy; that he is trying to build up, not to tear down. Its strength rests upon the fact that any human being is proud to have or to do something above the average. He receives pleasure and incentive from the fact that it is noticed and praised by superiors. It works irrespective of persons, whether they be generals, colonels, majors, junior officers, noncommissioned officers, cooks, or privates. It may be applied to any phase of every day military life, whether it be between line and staff, at a drill, an inspection, a tour of guard, or even in the supervision of a police detail. The application of this principle detracts in no way from what military men call "force." If, after fair trial, good results are not obtained, then

direct orders and direct action are necessary. If these latter measures do not accomplish the desired end, then the individual becomes a proper subject for prompt elimination from the service.

Case II. Immediately after the World War, the then Commandant of Cadets at West Point was impressed with the necessity of developing the latent leadership of cadets while in the Corps. To this end, tactical officers were assigned orderly rooms in the cadet barracks. They were thus brought into direct contact with cadets. Disciplinary matters were handled under policies, exactly as in the Service. Tactical officers were enjoined to be strict but absolutely just, and were not empowered to use arbitrary measures of punishment. The tactical officer became, in truth, the "Old Man" of his cadet company. His daily administration of the business of that company served as a daily object lesson to the cadet throughout his course at the Academy.

A text book "Military Man Power," by Lieutenant Colonel L. C. Andrews, U. S. A., was obtained and a course of instruction was given by the Tactical Department. Initiative and responsibility were developed in members of the First (senior) Class, by requiring each of them to rate every cadet in his company twice each year in certain fundamental qualities of character and appearance. These ratings were resolved by a mathematical formula and incorporated into the cadets' general standing for the year.

Beneficial results were immediate. Cadets began to see that officers were not hereditary enemies. On the other hand, officers began to take more interest in their cadets. They arranged for special coaching for those deficient in studies, and a community of interest developed which resulted in the cadets asking for and receiving advice and help on private, personal, and official matters. This was accomplished without lowering the standard of discipline in the least. It is certain that the relationship between commander and commanded is now much better understood at West Point than formerly.

This case illustrates a fundamental knowledge of human nature, and the power of example rightly employed.

Case III. Some years ago a young married second lieutenant was ordered on foreign service. On account of a sick child who was unable to travel, he applied for and obtained from The Adjutant General one month's delay in sailing. Upon arrival at his new station he was severely reprimanded by his colonel for the delay in reporting. He was further told in no uncertain terms that his future actions would be guided strictly by "the law." The colonel emphasized the nature of that law by pounding on a copy of Army Regulations. The child died later from the effects of the trip.

Though the colonel later apologized, no amends that he could ever make could remove that subordinate's sense of resentment and injustice, shared in common with all junior officers of the regiment. The colonel had lost their loyalty and respect. Apparently, how-

ever, he learned nothing from the incident, for as long as he commanded the regiment his methods were those of a martinet. Officers were being put in arrest and trials of officers and men were frequent. Outwardly, the regiment had every appearance of being an excellent organization; within, loyalty, esprit de corps, and morale were very low.

This case illustrates lack of understanding and sympathy on the part of the superior. It exemplifies also rule by fear. While the power to punish is a necessary attribute of command, it should be resorted to only when necessary. In some cases punishment should and must be given. Too often, however, the rule by fear is applied by all ranks in our Service. Enlisted men are too often tried by their company commanders because it is the easiest and quickest way to dispose of the cases. If a case contains any unjust or unfair elements, irreparable harm to morale is certain to result. Higher commanders sometimes centralize punishment, by policy, so that an enlisted man is tried irrespective of the wishes of his company commander. If the superior is of the martinet type, such a policy is harmful.

In any well disciplined organization, the superior must uphold the authority of the junior. The superior, however, has an equal duty in seeing that the subordinate does not act unjustly.

Case IV. Incident to border trouble, a certain infantry regiment was ordered to Texas some fifteen years ago. Prior to a practice march, a company commander of that regiment, just assigned, gave his company specific orders against drinking water from unauthorized sources. He explained that much of the water in the country was unsafe to drink. As the company had many recruits, he made the necessity for the order clear. In the course of the long march, the company halted, hot and tired, near a stream. Immediately on breaking ranks, one of the outstanding sergeants in the company, a man of long service, was seen drinking from the brook. In the presence of the assembled company, the captain quietly and without resentment cut away the sergeant's chevrons and assigned him to a squad as a private. Upon return of the company to the post, the regimental commander confirmed in orders the reduction of the sergeant to the grade of private.

This case illustrates a fundamental principle of command—an order once given must be strictly enforced. The sergeant's usefulness as a leader was destroyed by his own action. Since he himself did not obey, how could he expect obedience from others? Had this offense been left unpunished, the discipline in that company would have been nil. The fact that the punishment immediately followed the delinquency is an important point to note. This case also illustrates a very human trait of soldiers, which is to try out a new commander.

Case V. A new tactical officer was assigned to and joined a cadet company at West Point on the day that it completed a week's practice march in inclement weather. At Saturday inspection the following day,

many rifles were found dirty and rusty. The tactical officer immediately ordered a special inspection in one hour's time for those cadets whose equipment was not in satisfactory condition. Some rifles were again found to be unsatisfactory. Two supplementary inspections were held during the day for those cadets who had failed to come up to the required standard of the previous inspection. The few who had unsatisfactory rifles or equipment at the fourth inspection were at once awarded five demerits and ten confinements¹ or punishment tours. In addition thereto, they were confined to barracks until such time as their cadet captains had passed their equipment as satisfactory. On subsequent Saturday inspections, appropriate punishment was invariably awarded without any second opportunity to make good. Needless to say that particular tactical officer had no further trouble with the care of equipment.

This case is selected as illustrating two points.

First of all, class punishment should not be employed where individuals are at fault. While the entire company was generally unsatisfactory, there were individuals who did have excellent equipment at the first inspection. It would have been basically unsound to hold them further because others had failed to come up to the required standard. The course adopted put a premium on good work, but was absolutely inflexible as to poor work.

Secondly, sincerity of purpose will always produce results. The easiest way to have handled this situation would have been to punish all delinquencies at the first inspection. However, this would not have changed the condition of equipment for that particular Saturday. Moreover, such a course might have been unfair to certain individuals, on account of the short time available to prepare. The tactical officer wished to stress cleanliness of equipment rather than punishment. The series of inspections took all day, and sacrificed the leisure of all concerned. It impressed the fact that the equipment *must* be in a satisfactory condition. It gave the necessary time and opportunity, and only those cadets who were not playing the game received punishment in the end.

The action was designed as an object lesson, that no matter how disagreeable the task, poor performance would not be tolerated. This principle is susceptible of extensive application in ordinary every day military life. It is based on firmness rather than unnecessary harshness. Certain methods by one type of leader will not secure the same results when applied by another. The principle therefor is fixed, but the method of application often varies.

Case VI. A general officer was once visiting a large post. Part of the troops were out in a model camp erected to help with the instruction of students. Accompanied by the post commander, the colonel of the regiment, and other officers, the general made an inspection of the camp. The party came finally to the camp latrine, in the construction of which a certain

corporal had displayed great interest, energy, and initiative. The corporal was present at the inspection, full of pride in the consciousness of work well done. The general turned to the post commander and complimented *him* highly on the installations, saying that it was the best field construction that he had ever seen. The corporal who had done the work, stood by unnoticed by the general as the party passed on, but the wise post commander himself complimented the corporal as he left.

Passing later to the picket line, everything was found in excellent condition. Somewhat perfunctory comments were made by the general until he spied a man nearby grooming a horse. He stopped and gave a long dissertation in the hearing of the men on the general unsatisfactory methods of grooming animals, not only in all branches of our Service, but in that organization in particular, and called attention to that man as an example. The man was so humiliated by the gibes of the other men, and by the fact that he had brought adverse criticism on the company that he later attempted to desert the Service.

This case should hold some valuable lessons for the observant officer. First, men always respond to interest in themselves and their work. It would have cost the general nothing to have asked the corporal a few questions about himself, and to add a quiet word of commendation.

Another striking point is the readiness of the post commander to give due credit to the man actually responsible. Selfishness is a rock upon which so many promising military careers are wrecked.

Humiliation of a junior can never be condoned. It is probable that the incident about grooming the horse passed from the general's mind within the following five minutes. He simply took that means to drive home a lesson. Yet he unwittingly humiliated one man who probably will never forgive or forget, and lowered the morale of an entire organization.

To summarize, two authorities analyze and evaluate alike the inherent qualities which they consider essential to leadership. Too often, discussion on these points obscures the essence of what leadership should accomplish. The purpose of leadership is to secure the whole-hearted physical and moral cooperation. When such cooperation is spontaneous and free, and not until then, has true leadership been established.

Without attempting to state specifically all the principles of leadership, it may be said that they are the basis for all that a commander does to secure for himself the sincere, loyal, and voluntary cooperation.

In the analysis of cases lies the key to the practical application of troop psychology. Any officer of experience can state many examples, both good and bad, from his own observation. The inexperienced officer, however, can only observe and benefit from the methods of others.

Granted that instruction in troop psychology is necessary, the next consideration is to determine the best method of laying foundation. The applicatory method, supplemented by study and lectures, is preferable to all others.

⁽¹⁾ Required to remain in their rooms during leisure time on Wednesdays, Saturdays, and Sundays.

What's the Matter with the Reserve?

By Major F. J. Baum, 605th Coast Artillery (Ry)

IN THE December, 1930 issue of the COAST ARTILLERY JOURNAL appeared an article by Col. H. C. Barnes, C. A. C., under the title "Coast Artillery Reserve Problems."

Col. Barnes draws attention to the fact that of an allotted strength of approximately 12,000 officers, the Coast Artillery Reserves have but 4,229 commissioned, and that less than half of these are "taking advantage of the facilities offered them for inactive duty training."

As a reserve officer for many years and the present commander of a reserve unit, I have been in close touch with the existing situation and with the reaction of many reserve officers toward the service.

Whether or not the conditions existing, and the mental attitude held by most officers in my limited circle of activity, is a general situation throughout all Corps Areas, I am not in a position to say. But perhaps, if my own experiences may be considered as a cross section of the whole, they may be of some value to the officers of the regular establishment who have the interests of the Officers Reserve Corps at heart.

What is the reason, then, for the apparent lack of interest on the part of a majority of the Coast Artillery reserve officers?

Most decidedly it is NOT a result of the attitude and personality of the Regular Army officers assigned to duty as executives of reserve activities, for these men are universally extraordinarily well fitted to hold their assignments and their sympathetic help and friendly encouragement are far greater than the reserve officer could possibly have anticipated.

As I see it, from my own experience, and as a result of talking with many reserve officers of my acquaintance, there are four things that tend to kill their active interest in the Officers Reserve Corps.

First is the fact that reserve officers must serve so many years in a grade before they can secure promotion.

Consider a second lieutenant, entering the service at the age of 25. He must serve three years as a second lieutenant, four years as a first lieutenant and five years as a captain or a total of twelve years, at which time he will be 37 years old, before he is entitled to reach field rank.

To the energetic, impulsive, aggressive young man of the current generation, the outlook is discouraging at the very start.

It may, and probably will be, objected by the regular officer, that the youngster needs such time in each grade to fit him for his increasing responsibilities, and that officers of the Regular Army have to serve much longer periods in the respective grades. This is all true enough.

But what the regular officer usually fails to understand is the decidedly different attitude of mind and point of view of the reserve officer from that of the regular.

The regular officer has entered the army and has made it his life work. He devotes his whole time to the service and draws his pay for that service, regularly each month.

The reserve officer has taken his commission because he feels it a patriotic duty he owes his country and because he has a military "trend of mind." It's a side-line or hobby for him—not a life business. His life work lies in the business world where his income and promotion do not depend altogether upon certain specified long years of service in various subordinate positions. He can advance in positions of responsibility and earning capacity just as rapidly as he shows his superiors his capability. This is not true of his work in the Officers Reserve Corps.

Because his activities in the Reserve are in the nature of a recreation—a hobby, if you wish—he allows business engagements and social life to interfere with his attendance at the unit or group schools and with his correspondence work in the extension courses.

The second factor is the short life of his commission.

A reserve officer holds a commission which expires in five years. To enable him to renew it, he must do a certain amount of work. When he begins to drop behind due to extra business activities which directly affect his income, he contemplates the long hours of strenuous work required of him before the date his commission expires, and feels he can never devote the necessary time to the work. So he shrugs his shoulders and drops all activities. "What's the use?" he argues. "I'm bound to lose my commission in another year or two, anyway."

Such an officer is not interested in being placed on the inactive list because promotion and active duty training, the two main factors that make a reserve commission worth while, are thereby denied him.

It may very probably be contended that the reason why commissions were limited to five years was so the officers would be impelled to do the required work in order to hold their commissions. But this leaves out of consideration the fact that business conditions often arise where, for periods of several months to several years, officers are absolutely unable to devote any time to reserve activities without sacrificing their successful careers and established incomes. Earning a suitable living MUST come first. The regular officer earns this while in the service, but the reserve officer earns it outside the service. This is truly a very vital difference.

The third factor is lack of sufficient active duty training to hold the reserve officer's interest. If the average reserve officer gets to camp once in three years with his organization, he is lucky.

The long periods of school work, whether it be in unit or group schools or in extension courses, grows very monotonous when there is so little actual practical work to relieve it.

This is especially true in the Coast Artillery where we have such a variety of armament and such a multitude of fire control details and instruments to learn. No text, however well planned and written, can give an officer that intimate knowledge of his duties and the various instruments he has to work with, which will make him efficient. It is necessarily mostly theory.

Most of the extension work, while very essential, is dry and uninteresting. A reserve officer needs to go to active duty training every year in order to keep up his interest. Every National Guard officer and unit goes to camp every year without fail.

I have been in personal contact with quite a number of regular army officers who have been detailed for duty with the Organized Reserve, both in Coast Artillery and in other branches, and in my experience, each one has been a man of outstanding ability for this type of work.

In spite of the fact that these officers are burdened with a mass of office detail and are short of clerical help, they find time to take personal interest in each individual reserve officer and his own personal problems.

As a result, every reserve officer of my acquaintance—and that includes the Atlantic Coast, Pacific Coast, Hawaii and the Philippines—holds the greatest respect and love for these hard working, conscientious, honorable men who so faithfully uphold the best traditions of the Service.

But the regular officers on duty with the Organized Reserve are powerless to alter the basic conditions of unrest and dissatisfaction now current among the reserve officers.

The fourth factor that tends to lull the reserve officer to inactivity is the talk of peace!

Why does any citizen take a commission as a reserve officer? To be ready to fight in the next war. But the "next war" is something very intangible, far off in the dim and distant future.

We say the reserve officer should use these piping days of peace to prepare for his duties in that war of the distant future, but the average reserve officer figures differently, as long as present conditions of the service are unsatisfactory. He knows that in any major emergency many thousands of officers will be needed, as was the case in the World War. The reserve officer argues, that as he has already held a commission in the Officers Reserve Corps, he will be among the favored ones when the emergency comes—if it ever does! Regardless of his present lack of training, he thinks he is far ahead of the totally untrained man who may apply for a commission, so he goes thoughtlessly on his way, busy with the pursuits of industry

and commerce, but with that underlying feeling of assurance that when the emergency comes, he will get a commission anyway.

There is yet another disheartening condition which affects unit commanders primarily, but also has considerable secondary effect upon the junior officer.

This is the present practice of assigning the "dead wood" to live and active organizations. How can any unit develop that esprit de corps which carries the individual of the unit through to amazing accomplishments in attendance records and school hours when they know their possible percentage is continually cut down by being required to carry on their active roles the names of officers whose interest in the service has long since died?

In every Corps Area there are a certain number of reserve officers whose commissions are on an active status, but these men will not answer official correspondence and will not attend unit or group schools. In many cases, even their present address is unknown and mail addressed to them is returned. Yet each unit commander is required to carry a number of such men on his assigned list. There is no way to get rid of them and build up a one hundred per cent accomplishment record.

All such officers should be carried on an "unassigned list" in place of forcing their assignment on unit commanders who are working long hours trying to build up an organization of which they and the Corps Area Commander may be proud.

The present practice is a decidedly harmful one as it has a tendency to dishearten the active reserve officers and lower the morale of the whole unit. The continued absence of certain assigned officers at unit and group schools and other unit gatherings, discourages those who make sacrifices to attend.

I feel that probably most regular Officers will not agree with me in these conclusions because there are a few reserve officers who are so keenly interested in military affairs and adequate defense of our country that they devote long hours to their military-civilian duties, at the sacrifice of business and social activities. Such officers are, of course, brought prominently to the attention of regular officers who contact the Reserve Corps. But such officers are a decided minority in the Reserve Corps.

No criticism is fair unless some plan is offered to better existing conditions. As a result of many years of experience as a reserve officer and my talks with scores of younger reserve officers, I therefore offer the following suggestions.

First, it is suggested that consideration be given to eliminating the periods of service required in each grade and that reserve officers be promoted as fast as they qualify by receiving their "certificates of capacity" for the next higher grade, providing they pass an examining board which shall be composed of at least fifty per cent reserve officers, and providing further that there exists a vacancy in the grade above them. This will provide incentive to younger officers.

Immature and unsatisfactory officers can be easily held back by the board.

Second, that, like the National Guard Officer who attends his weekly drills, the Reserve Officer be paid a nominal monthly sum, providing he has completed a satisfactory number of hours work in the extension courses, or unit and group schools, during the current month.

Third, that once commissioned in the Reserve Corps, his commission shall continue for life, subject to an annual physical examination and the usual obedience to superior officers, orders, and decent conduct as an officer. Establish a "retired list" without pay, for such officers as may be entitled to it, under conditions similar to those now existing in the Regular Army. Establish an "Inactive List" to take care of those showing minor physical disqualifications at the annual physical examinations and for those who personally request such status. Establish an "Unassigned" or "D. O. L." status to take care of all officers who do not complete the required number of hours in school or extension work in any one year.

Such officers would still be eligible to assignment and promotion upon obtaining "Certificates of Capacity," no matter how many years it takes them to obtain the necessary credits.

Fourth, that every Reserve Officer have the opportunity to receive active duty training for two weeks every year. Present conditions of business duties would allow him to decline the service at camp if necessary, as it does now, but he would know that the training period was available to him if he could arrange to take it.

Some of these suggestions pre-suppose sufficient funds available to the War Department for pay and travel, and would require an additional annual allowance.

Obviously, nothing can be done to provide the reserve officer with definite prospects of a coming war, but a short history of our past wars and the intervening periods of peace would soon convince him that

a future war may reasonably be expected, at least in the lifetime of the junior officers.

I hear cries of "Jingo!"—but those of us who saw service overseas are probably the most peacefully inclined of all the citizens of this great country. No, it's not "Jingoism."

It makes no difference what business or profession a man studies, if he hears on all sides that he will probably never have the opportunity to put this training into actual practice he soon loses interest in the subject. In the case of the officers of the Reserve Corps, a little history might help!

The funds that would be required to follow some of the above suggestions are not at present available. It would take the approval of the President, the Director of the Budget and the Congress to provide the necessary finances. But if the Officers Reserve Corps is worth anything to our scheme of national defense, it is worth the additional expense that will make it an active, efficient force, attractive to our citizens.

As a reserve officer I firmly believe in the theory of the Officers Reserve Corps. My interest in it lies not alone in the Coast Artillery; not in the relationship with the Regular Army; but in its inherent value to the United States as a whole. I do not think that the suggestion made by Col. Barnes in his article, to "bring about the transfer to the Coast Artillery Reserve of qualified reserve officers who are surplus in the other sections" reaches the fundamental basis of the situation at all. Such effort is to build the Coast Artillery Reserve at the expense of the other branches, and although such transfers may be of officers who are at present "surplus" in their branches, they will be badly needed in time of major emergency. A loss of such officers by other branches now, means they must train additional men later on to fill the demand when the war time expansion of the service arrives.

Let us study the real underlying problems and arrive at a solution of benefit to the country as a whole.



Machine Guns Set Up for Antiaircraft Fire by the 62nd C. A. C. (AA) at Mitchel Field, N. Y.

Tables of Organization for the Antiaircraft Regiment

THE approval of new tables of organization for the Coast Artillery antiaircraft regiment furnishes an opportunity to inform the readers of the JOURNAL of some of the work which is done in the Training Section of the Office of the Chief of Coast Artillery. These tables are the responsibility of Captain John H. Wilson, C. A. C., who is a member of the Training Section. While the completed tables are not entirely the product of Captain Wilson it was his duty to serve as a steering committee of one and polish them until they would stand the scrutiny of the War Department. Major O. L. Spiller contributed to certain parts of them when he was on duty in the office. The Joint Antiaircraft-Air Corps Board which supervised the Aberdeen Exercises submitted recommendations which were considered in their preparation as did the Coast Artillery School and the Coast Artillery Board. Troops in the field were also consulted and had their say. The War Department and the various G sections, in particular, must be sold on them before they will recommend approval to the Chief of Staff. Captain Wilson confers with all the personnel mentioned above in an informal manner. Many conferences are held and difficulties ironed out. The procedure followed is somewhat tedious but when a project of this kind is finally submitted formally by the Chief of Coast Artillery to the War Department it is almost always approved.

The new tables of organization for the antiaircraft regiment were approved by the War Department November 10, 1930. They have been in process of revision for over two years, completion being delayed until allowances of equipment were approved. These tables are unique in that they are the first ever prepared for the Coast Artillery under the new policy of combining the peace and war tables into one. The peace strength shown in the tables represents the ideal for a standard organization—that is, what we would like to have in each of our regiments in the United States.

These tables differ in some particulars from the former tables. The changes made were not the result of the conceptions of any one person. Many of them were the result of the firing tests held annually at Aberdeen Proving Ground and especially as a result of the joint Antiaircraft-Air Corps exercises held there last May.

It will be noted that there are now fifteen searchlights and sound locators to each searchlight battery. This item alone caused a considerable increase in strength of the searchlight battery. The reason for the increase is rather obvious. Twelve searchlights and six sound locators, as carried in the old tables, were considered insufficient to locate and illuminate targets efficiently. It may surprise some to note that machine guns have been eliminated from the headquarters and searchlight batteries. This was done in

an effort to decrease the total number of machine guns in the regiment. There will be an argument on this item. It can be heard already.

If memory is correct, the need for a combat train in the machine gun battalion was emphasized by the faculty of the Coast Artillery School. It will be noted that the new tables include a headquarters detachment and combat train for this battalion corresponding to a similar unit in the gun battalion. Six trucks were considered sufficient to transport the required machine gun ammunition.

One result of the Aberdeen Exercises was the increased appreciation of the importance of radio communication. The outer bands of intelligence observers will use radio altogether. The immense amount of wire which would be required eliminates wire communications for distant stations from the picture. It is too difficult to transport and too hard to maintain. Therefore the new tables include a Division radio truck as an article of equipment in order that the efficiency of radio communication may be increased to the maximum.

In the new tables the machine gun detail of the gun battery is now a part of the firing battery section instead of the maintenance section. This is consistent since these details are for offense—they fire on attack planes in defense of the antiaircraft guns or whenever opportunity offers. Therefore they were removed from the maintenance section whose functions are not directly offensive.

Prime movers (a term invented by the Ordnance Department) have not been listed separately due to the fact that the truck for towing the gun has not been standardized. For the present there is no differentiation made between prime movers and cargo trucks.

The new tables are numbered under a system now standard. The antiaircraft regiment is covered in the 120 series. Beginning with 120, we find that this number designates the table for the regiment as a whole. Table of Organization 120 is followed by 121 which applies to the Headquarters and Headquarters Battery. 122 is the table for the Service Battery. After the headquarters units of Gun Battalion is numbered 123 followed by its subordinate units in order. The last number, 129, is the machine gun battery.

Only a few copies of these tables have been photostated. None are available for distribution to the units concerned. It will be many months before the War Department will be able to print them and distribute them generally. Believing that the tables may be useful to all officers assigned to antiaircraft regiments the COAST ARTILLERY JOURNAL has undertaken their publication. The tables which follow were reproduced from the tables approved and may be used, if necessary, without question as to their authenticity.

TABLE OF ORGANIZATION }
No. 120 }

REGIMENT, ANTI-AIRCRAFT ARTILLERY, COAST ARTILLERY CORPS

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UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9												10												11											
UNITS											Specialists' ratings (class)		1												2												3												4												5												6												7												8												9</																																			

REMARKS: a The warrant officer and the enlisted men in this column belong to the band.

b Guns, 3-inch, A. A. M1918 will have in addition an equal number of Tracer M1918.

c Dental.

d Pursuant to paragraph 1, AR 310 60, component parts, spare parts, accessories, etc., per-

taining to items of equipment listed in this table, will be found in the supply catalogs of the interested arms or services.

NOTE: The regimental band is a separate organization commanded by the regimental adjutant and will be attached to a regimental unit for administration, mess and supply.

HEADQUARTERS AND HEADQUARTERS BATTERY, AA. REGIMENT, COAST ARTILLERY CORPS

TABLE OF ORGANIZATION }
No. 121

UNIT	Specialists' ratings (class)	Headquarters Battery												REMARKS					
		Operations Section																	
		Regimental hq.		Battery hq. section		Regimental hq. detail		Intel. detail		P. and T. detail		Com. detail			Main section		Total hq. battery		Aggregate
P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W		
1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Colonel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Lieutenant colonel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Captains	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	First lieutenants	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Total commissioned	4	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	Master sergeants, including																		
8	Master gunner																		
9	Sergeant major																		
10	Technical sergeants, including																		
11	First sergeant																		
12	Electrician, general																		
13	Radio																		
14	Staff sergeants, including																		
15	Color																		
16	Sergeants, including																		
17	Clerk, headquarters																		
18	Communications																		
19	Mail																		
20	Mess																		
21	Radio																		
22	Supply																		
23	Transportation																		
24	Corporals, including																		
25	Clerk, battery																		
26	Communications																		
27	Observers																		
28	Privates, first class																		
29	Privates																		
30	Buglers																		
31	Chauffeur																		
32	Chauffeurs																		
33	Chauffeurs																		
34	Clerks, headquarters																		
35	Cooks																		
36	Cook																		
37	Linemen, telephone																		
38	Mechanics, auto																		
39	Mechanics, auto																		
40	Mechanics, general																		
41	Mechanics, general																		
42	Motorcyclists																		
43	Observers																		
44	Operators, radio																		
45	Operators, switchboard																		
46	Orderlies																		
47	Basic																		
48	Total enlisted	4	6	3	3	7	11	13	19	4	4	4	19	28	18	24	63	88	96
49	Aggregate																		
50	Q-Car, passenger, light																		
51	Q-Car, passenger, medium																		
52	Q-Omnibus, field																		
53	Q-Motorcycles, with side cars																		
54	Q-Trailer, kitchen, light																		
55	Q-Trailer, tank, light, 250 gallon																		
56	Q-Truck, cargo, light utility																		
57	Q-Trucks, cargo, heavy																		
58	Q-Truck, radio, division																		
59	Q-Bicycle																		

a Regimental staff consists of—Executive; adjutant; intelligence officer; plans and training officer; supply officer; communications officer; munitions officer.

The regimental supply officer commands the service battery and is included in the totals of that organization. At peace strength staff officers' duties are combined as directed by the regimental commander.

b 1 for officers' mess.

c One (1) truck, cargo, light utility, issued for employment as light repair truck to be equipped with unit equipment for light repair truck as listed in Circular 4, Office Quartermaster General, March 18, 1930.

e 2 for wire and reels; 2 for equipment, baggage and rations; 1 for personnel.

† May be requisitioned for as occupational specialists provided a selective service system is in operation.

SUMMARY OF SPECIALISTS' RATINGS:

4th class	2	3
5th class	9	13
6th class	9	10
Total	20	26

Purview to paragraph 1, AR 310-60, component parts, spare parts, accessories, etc., pertaining to items of equipment listed in this table, will be found in the supply catalogs of the interested arms or services.

APPROVED November 10, 1930. (A. G. 320.2 (7-11-30))

This table supersedes T/O 124 P, June 12, 1926 and T/O 124, W, February 23, 1927.

SERVICE BATTERY, ANTIAIRCRAFT REGIMENT, COAST ARTILLERY CORPS

APPROVED November 10, 1930. (A. G. 320.2 (7-11-30))

[illegible]

TABLE OF ORGANIZATION }
No. 123
1ST BATTALION (GUN) ANTI-AIRCRAFT REGIMENT, COAST ARTILLERY CORPS

	1		2		3		4		5		6		7	
	UNIT		Specialists' ratings (class)		Headquarters and headquarters bat- train (T/O 124)		Searchlight battery (T/O 125)		2 Gun batteries (T/O 126)		3 Gun batteries (T/O 126)		REMARKS	
	P	W	P	W	P	W	P	W	P	W	P	W		
2 Major	1	1	1	1	1	1	1	1	1	1	1	1		
3 Captains	1	1	1	1	1	1	1	1	1	1	1	1		
4 First lieutenants	2	2	2	2	2	2	2	2	2	2	2	2		
5 Second lieutenants	1	1	1	1	1	1	1	1	1	1	1	1		
6 Total commissioned	5	5	5	5	5	5	5	5	5	5	5	5		
7 Technical sergeants	1	1	1	1	1	1	1	1	1	1	1	1		
8 Staff sergeants	3	3	3	3	3	3	3	3	3	3	3	3		
9 Corporals	6	6	6	6	6	6	6	6	6	6	6	6		
10 Privates, first class	15	15	15	15	15	15	15	15	15	15	15	15		
11 Privates	32	32	32	32	32	32	32	32	32	32	32	32		
12 Specialists	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)		
13 Specialists	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)		
14 Specialists	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(13)		
15 Specialists	(20)	(20)	(20)	(20)	(20)	(20)	(20)	(20)	(20)	(20)	(20)	(20)		
16 Base	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)		
17 Total enlisted	63	117	157	250	242	501	462	868						
18 Aggregate	68	126	160	254	248	513	476	893						
19 O-Cars, passenger, light	1	1	1	1	1	1	1	1	1	1	1	1		
20 O-Omnibus, field	1	1	1	1	1	1	1	1	1	1	1	1		
21 O-Generators, sound	2	2	2	2	2	2	2	2	2	2	2	2		
22 O-Motocycles, with side cars	3	3	3	3	3	3	3	3	3	3	3	3		
23 O-Mount, 3-inch, A.A. gun a	1	1	1	1	1	1	1	1	1	1	1	1		
24 O-Searchlight, mobile unit, 60-inch, complete with comparator	1	1	1	1	1	1	1	1	1	1	1	1		
25 O-Tractors, medium	1	1	1	1	1	1	1	1	1	1	1	1		
26 O-Tractors, instrument MI	1	1	1	1	1	1	1	1	1	1	1	1		
27 O-Trailers, kitchen, light	1	1	1	1	1	1	1	1	1	1	1	1		
28 O-Trailers, tank, light, 250 gallon	1	1	1	1	1	1	1	1	1	1	1	1		
29 O-Trailers, 3-inch field gun, M1918 A4	1	1	1	1	1	1	1	1	1	1	1	1		
30 O-Trucks, cargo, light utility	2	2	2	2	2	2	2	2	2	2	2	2		
31 O-Trucks, cargo, heavy	7	7	7	7	7	7	7	7	7	7	7	7		
32 O-Truck, tank, heavy, 750 gallon	1	1	1	1	1	1	1	1	1	1	1	1		
33 O-Guns, antiaircraft	1	1	1	1	1	1	1	1	1	1	1	1		
34 O-Guns, machine, A.A., complete with mount	1	1	1	1	1	1	1	1	1	1	1	1		
35 O-Pistols	68	126	160	254	248	513	476	893						

APPROVED November 10, 1930. (A. G. 320.2 (7-11-30))

This table supersedes T/O 126 P, June 12, 1926 and T/O 126, W, February 23, 1927.

SEARCHLIGHT BATTERY ANTIAIRCRAFT REGIMENT, COAST ARTILLERY CORPS

TABLE OF ORGANIZATION {
No. 125

UNIT		Specialists' ratings (class)	One platoon										Total Battery								
			Btry. sq.		Platoon		Com. detail		Sound locator squad		S. L. squad				Total (6 sections)		Main section				
			P	W	P	W	P	W	P	W	P	W			P	W	P	W			
2	Captain		1	1												1	1	1	1	3 Plat.	
3	First lieutenants				1	1											2	2	2	2	2 Plat.
4	Total commissioned		1	1	1	1										1	1	3	4		
5	Technical sergeants, including																				
6	First sergeant		1	1													1	1	2	2	
7	Transportation		(1)	(1)													(1)	(1)	(1)	(1)	
8	Staff sergeants, including				2	2											2	2	2	2	
9	Electricians, searchlight				1	(2)											1	(2)	6	6	
10	Sergeants, including				1	1											6	6	2	2	
11	Mess				(1)	(1)											(1)	(1)	(1)	(1)	
12	Platoon				(1)	(1)											(1)	(1)	(1)	(1)	
13	Section																				
14	Supply																6	6	13	13	
15	Corporals, including		1	2			1	1									1	1	(1)	(1)	
16	Agent		(1)	(1)															(1)	(1)	
17	Clerk, battery		(1)	(1)													(1)	(1)	(1)	(1)	
18	Communications				(1)	(1)											(1)	(1)	(2)	(2)	
19	Searchlight																(1)	(1)	(10)	(10)	
20	Privates, first class, including		7	8	4	6	4	8	5	5							53	59	17	17	
21	Privates		(2)	(2)													(5)	(5)	(2)	(2)	
22	Buglers																		(1)	(1)	
23	Chauffeurs and operators electrical power plant																		(1)	(1)	
24	Chauffeurs		(1)	(1)													(2)	(2)	(2)	(2)	
25	Chauffeurs		(1)	(1)													(1)	(1)	(7)	(7)	
26	Chauffeurs		(2)	(2)													(1)	(1)	(2)	(2)	
27	Cooks																		(1)	(1)	
28	Cooks																(2)	(2)	(3)	(3)	
29	Linemen, telephone																(10)	(10)	(4)	(4)	
30	Linemen, locator																		(1)	(1)	
31	Mechanics, auto																		(2)	(2)	
32	Mechanics, auto																		(2)	(2)	
33	Mechanics, general																		(1)	(1)	
34	Motorcyclists																		(1)	(1)	
35	Operators, controller-comparator		(1)	(2)	(1)	(1)											(1)	(1)	(3)	(3)	
36	Operators, searchlight																(10)	(10)	(20)	(20)	
37	Operators, sound lag corrector																(5)	(5)	(10)	(10)	
38	Operators, switchboard																(10)	(10)	(20)	(20)	
39	Operators, telephone																(7)	(7)	(15)	(15)	
40	Base																(1)	(1)	(10)	(10)	
41	Total enlisted		9	11	6	9	5	9	6	6	5	5	66	73	16	20	157	167	250	250	
42	Aggregate		10	12	7	10	5	9	6	6	5	5	67	74	16	20	160	169	254	254	
43	Q-Car, passenger, light		1	1															1	1	
44	Q-Omnibus, field		1	1															1	1	
45	Q-Locators, sound																		10	10	
46	Q-Motorcycles, with side cars																		3	3	
47	Q-Searchlight, mobile unit, 60", complete with comparator		1	2	1	1			1	1			5	5					6	6	
48	Q-Trailer, kitchen, light																		1	1	
49	Q-Trailer, tank, light																		1	1	
50	Q-Trucks, cargo, light utility		1	1	2	2	1	1					3	3					2	2	
51	Q-Trucks, cargo, heavy																		1	1	
52	Q-Truck, gasoline, 750 gallon		10	12	7	10	5	9	6	6	5	5	67	74	16	20	160	169	254	254	
53	Q-Pistols																				

REMARKS:

a Performs duties of chief of locator squad in addition to acting as chief of section.

b One (1) truck, cargo, light utility, issued for employment as light repair truck, to be equipped with unit equipment for light repair truck as listed in Circular 4, Office Quarter-

master General, March 18, 1930.

c 1 for wire and reels; 2 for ratings and baggage; 3 for personnel; 6 for searchlight personnel and sound locators. T1 and T2. When locators M1 have been issued 6 trucks will be eliminated from tables of organization.

+ May be requisitioned for as occupational specialists provided a selective service system is in operation.

APPROVED November 10, 1930. (A. C. 320.2 (7-11-30))

This table supersedes T/O 129 P, June 12, 1926 and T/O 129 W, February 23, 1927.

Tables of Organization for the Antiaircraft Regiment

February, 1931

TABLE OF ORGANIZATION }
No. 126

GUN BATTERY, ANTI-AIRCRAFT REGIMENT, COAST ARTILLERY CORPS

UNIT	Spec. ratings (class)	Operations section										Firing battery										Main sec.	Total	
		Btry. sq. section		Com. detail		Range detail		Com. detail		No. 1 gun sec.		No. 2 gun sec.		No. 3 gun sec.		No. 4 gun sec.		M. G. detail		Total firing battery				
		P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W			
1	Captain	1	1																					
2	First lieutenant																							
3	Second lieutenant																							
4	Second lieutenant																							
5	Total commissioned																							
6	Technical sergeant, including																							
7	First sergeant																							
8	Staff sergeant, including																							
9	Electrician, A.A.																							
10	Sergeants including																							
11	Section																							
12	Communications																							
13	Instrument																							
14	Machine gun																							
15	Moss																							
16	Supply																							
17	Transportation																							
18	Corporals, including																							
19	Agent																							
20	Ammunition																							
21	Clerk, battery																							
22	Gun pointers																							
23	Instrument																							
24	Machine gun																							
25	Range setters																							
26	Privates, first class } including																							
27	Privates																							
28	Buglers																							
29	Guns and ammunition detail																							
30	Chauffers																							
31	Chauffers																							
32	Chauffers																							
33	Cook																							
34	Cook																							
35	Drivers, tractor																							
36	Guns, machine, A.A.																							
37	Guns, machine, A.A.																							
38	Instrument																							
39	Mechanics, telephone																							
40	Mechanics, artillery																							
41	Mechanics, auto																							
42	Mechanics, auto																							
43	Mechanics, general																							
44	Motorcyclists																							
45	Observers																							
46	Operators, switchboard																							
47	Basic																							
48	Total enlisted																							
49	Aggregate																							
50	Q Cars, passenger, light																							
51	Q Motorcycles with side cars																							
52	O-Mount, 3-inch, A.A. gun (c)																							
53	O-Tractors, medium																							
54	O-Tractor, kitchen, light																							
55	Q-Trailer, tank, light 250 gallon																							
56	Q-Trailer, 37 field gun, M1918 A4																							
57	Q Truck, cargo, light utility																							
58	Q Trucks, cargo, heavy																							
59	O-Guns, A.A.																							
60	O-Guns, machine, A.A., com. with mount																							
61	O Pistols																							
62																								

REMARKS: a Battery executive. b Assistant executive. c Range officer. d Guns, 3-inch, A.A. M1918 will have in addition an equal number of trailers, M1918. e One (1) truck cargo, light utility, issued for employment as light repair truck, to be equipped with unit equipment for light repair truck as listed in Circular 4, Office Quartermaster General, March 18, 1929. f 1 for range instruments, when instrument trailer is not provided; 1 for artillery supply; 1 for radios, baggage and personnel; 8 for guns and ammunition. Machine guns and personnel of the machine gun detail may be distributed as desired among trucks of the battery. g May be requisitioned for as occupational specialists provided a selective service system is in operation.

TABLE OF ORGANIZATION }
No. 127
2ND BATTALION (M. G.), ANTI-AIRCRAFT REGIMENT, COAST ARTILLERY CORPS

1	Unit	2	3	4	5	6
		Specialists' ratings (class)	Headquarters and head- quarters battery (T/O 128)	2 machine gun batteries (T/O 129)	4 machine gun batteries (T/O 129)	Remarks
			P	W	P	W
2	Major		1	1	1	1
3	Captains			1	2	2
4	First lieutenants		2	3	2	4
5	Second lieutenants			1	2	11
6	Total commissioned		3	6	6	13
7	Technical sergeants					30
8	Staff sergeants		1	1	2	
9	Sergeants		2	6	20	5
10	Corporals		2	6	22	1
11	Privates, first class {		5	18	64	58
12	Privates		11	37	128	80
13	Specialists	3d				210
14	Specialists	4th		(2)	(4)	392
15	Specialists	5th	(3)	(5)	(8)	420
16	Specialists	6th	(5)	(11)	(16)	(4)
17	Basic		(8)	(37)	(140)	(14)
18	Total enlisted		21	69	236	(21)
19	Aggregate		24	75	242	(45)
20	Q-Cars, passenger, light		1	1	2	(148)
21	Q-Motorcycles, with side cars		2	4	4	720
22	Q-Motocycles, light		1	1		257
23	Q-Motocycles, kitchen, light					780
24	Q-Trailers, tank, light, 250 gallon			1	2	819
25	Q-Trucks, cargo, light utility		1	1	4	744
26	Q-Trucks, cargo, heavy		2	2	4	
27	Q-Guns, machine, A.A., complete with mount			8	24	4
28	O-Pistols		24	75	242	5

APPROVED November 10, 1930. (A. G. 320.2 (7-11-30)) This table supersedes T/O 120 P, June 12, 1926 and T/O 120 W, February 23, 1927.

TABLE OF ORGANIZATION }
No. 128

HQ. AND HQ. BTRY. AND COMBAT TRAIN, 2ND BN. (M. G.), AA. REGIMENT, COAST ARTILLERY CORPS

1	Unit	Specialists' ratings (class)	Headquarters Battery														Total	
			Operations Section															
			Bn. hq.		Btry. hq.		Bn. Hq.		Intell.		P. and T.		Com. detail		Combat train			Main section
P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	
2	Major		1															
3	Captain		1a															
4	First lieutenant		2a		1a													
5	Second lieutenants		1a													1a		
6	Total commissioned		2	4	1	1										1		
7	Technical sergeant, including																	
8	First sergeant																	
9	Staff sergeant, including																	
10	Sergeant major																	
11	Sergeants, including																	
12	Combat train																	
13	Communications																	
14	Mess and supply																	
15	Observer																	
16	Radio																	
17	Transportation																	
18	Corporals—including																	
19	Agent																	
20	Ammunition																	
21	Clerk, battery																	
22	Clerk, headquarters																	
23	Communications																	
24	Privates, first class including																	
25	Privates																	
26	Buglers																	
27	Chauffeurs																	
28	Chauffeurs																	
29	Chauffeurs																	
30	Clerk, headquarters																	
31	Cook																	
32	Cook																	
33	Librarian, telephone																	
34	Mechanics, auto																	
35	Mechanics, auto																	
36	Mechanics																	
37	Operators, switchboard																	
38	Operators, radio																	
39	Scouts and observers																	
40	Base																	
41	Total enlisted																	
42	Aggregate																	
43	O Car, passenger, light																	
44	Q Motorcycle, with side cars																	
45	Q Omnibus, field																	
46	Q Trailer, kitchen, light																	
47	Q Trailer, tank, light, 250 gallon																	
48	Q Truck, cargo, light utility																	
49	Q Trucks, cargo, heavy																	
50	O Pistols																	

REMARKS

a Battalion staff consists of—
Executive, adjutant, communications officer (commands headquarters battery); plans and training and intelligence officer; supply officer; munitions officer (commands combat train); and hospital officer. The headquarters section of the service battery and is included in the table of service battery. At peace strength, staff officers' duties are combined as directed by the battalion commander.

b One (1) truck, cargo, light utility, issued for employment as light repair truck, to be equipped with unit equipment for light repair truck as listed in Circular 4, Office Quartermaster General, March 1928.
c 6 for ammunition; 1 for wire and reels; 1 for baggage and personnel.
† May be requisitioned for as occupational specialists provided a selective service system is in operation.

1		2		3		4		5		6		7		8		9		10		11			
UNIT				Specialists' ratings (class)				Operations section				Platoon hq.				One platoon				Main section		Total battery	
								Command detail		Com. detail				1 squad		1 section (2 squads)		Total platoon (2 sections)					

REMARKS

a Battery executive.
b Reconnaissance and communications officer.
c One (1) truck, cargo, light utility, issued for employment as light repair truck, to be equipped with unit equipment for light repair truck as listed in Circular 4, Office Quartermaster in operation.
General, March 18, 1930.
e 12 for machine guns, ammunition and gun squads; 1 for wire and reel; 2 for equipment, baggage and ration; 2 for personnel.
+ May be requisitioned for as occupational specialists provided a selective service system is in operation.
This table supersedes T/O 122 P, June 12, 1926 and T/O 122 W, February 23, 1927.
APPROVED November 10, 1930, (A. G. 320.2 (7-11-30))

Comments on the Article

"The Case of Tracers vs. Sights"

By "Machine Gunner"

MAJOR Robinson's general statement of the problem an antiaircraft machine gun unit must face under service conditions is largely correct. Too little attention, no doubt, has been paid to the increased speed, the free maneuverability, and the characteristic of surprise which the machine gun target will now possess in war. Unfortunately, however, these important phases of service conditions are those most difficult to incorporate into peace time training operations and, consequently, the proper solution to the problems they present is necessarily theoretical and subject to controversy. The proper fire control methods to use against modern craft under modern conditions can be correctly and finally determined only by experience. A study of modern air tactics, however, in connection with the capabilities and limitations of our present materiel and equipment will give us a fair idea of what can be accomplished. Considerable thought and attention have been given to the development of tracer ammunition and its use as a means of fire control for antiaircraft machine guns.

As stated by Major Robison, substantial progress has been made in the development of a suitable tracer. This progress has not been confined to range alone. Decided improvement has been made in the visibility and stability of tracer ammunition. This progress, however, should not lead the antiaircraft artilleryman to hasty conclusions as to the efficacy of tracers in the problem of fire control. Can the conclusion of Major Robison that, with modern tracers, the gunner "can unquestionably hit quickly, bounteously, and with reliability at such ranges and in the time which may be expected to be available" be accepted from a consideration of the improvement of tracer bullets alone? Can we thus dismiss the subject of fire control? Assuming that time is decidedly of the essence and that the first shots are those that count the most and provide the essential element of surprise, how is the gunner to bring accurate fire on the target *initially*? Assuming, further that there will be need for adjustment of fire in most cases how can this adjustment best be made? By tracer control, by sights, or by both, and by whom? These are questions which must be considered.

In the first place we can safely assume that the speed of the target plane may approach or exceed 150 miles per hour; that, conforming to modern air tactics, it will normally fly at low altitudes; and that full advantage will be taken of its ability to maneuver and surprise. Under these conditions it is doubtful if more than 20 seconds will be available, after obser-

vation of an enemy plane, to open effective fire. Plenty of targets will be encountered under more favorable conditions but our system of fire control obviously cannot be designed to meet only the more favorable cases. Any system to be used under service conditions must be suitable for any and all contingencies. But the fact that the time for preparation of fire will be extremely limited demands that the first shots be effective. If 20 seconds represents the total available time, the seconds representing the time of flight (before the first tracers are visible) are especially golden. There will be no tracers to guide the first shots. Guns cannot be pointed initially by tracers. There must be some method by which the guns can be accurately pointed from the start. This, in turn, requires data in some form and a sight with which to use it.

To begin with, the method of pointing must be *simple* but it is none the less *essential*. There are no fire control instruments now in use or under test that will determine data accurately or promptly enough for antiaircraft machine gun use in modern war. Can we state, however, that such instruments *cannot* be designed and dismiss their possibility bluntly and finally? Such an attitude is probably the natural reaction to the rapid progress in aircraft. The pendulum has swung from one extreme to the other. When speed was slow and conditions favorable we took advantage of the available time to use deliberate fire control methods and carefully to determine and apply fire control data. Now that the time has been greatly reduced we are apt to jump head long into the maelstrom of careless methods and shut our eyes to the fundamental principles of successful shooting, with *any* type of gun. We must not forget that the machine gun, especially, has wide dispersion, particularly at long ranges, that the machine gun bullet has no fuze or bursting charge; that it must actually strike the aviator or strike or cause material damage to a vulnerable portion of the plane to be effective. We cannot expect to get results, with such a weapon, without careful shooting and to disregard the necessity for preparation of fire is to expect our weapon to perform an impossible task. While the reduction in available time has restricted the use of elaborate fire control instruments and deliberate methods, it has not eliminated the necessity for *some* preparation of fire and instruments or methods will be devised to meet the changing situation. No offensive action has been used in war yet for which an effective antidote has not been found. Until suitable

instruments are designed, however, some method must be used to obtain initial data for the gunner. This data includes the amount of vertical and lateral lead necessary for him to bring effective fire on the target at once and is essentially based upon the speed, range and angular height of the target. The essential elements of data should, in the absence of suitable instruments to obtain them, be estimated. The individual gunner can be trained to compute them with a fair degree of accuracy. The machine gun platoon, however, is the tactical firing unit and the determination of firing data under direction of the platoon commander is considered both feasible and desirable. (See page 73, Vol. II, Coast Artillery Field Manual.) The essential point is that every available means should be employed to secure the most accurate initial firing data obtainable in a given situation. There may be occasions in which the individual gunner must operate as a complete firing unit. At other times central control would be both practicable and desirable, in fact, as will be seen later, is quite necessary in the accurate adjustment of fire in most cases.

The next question is "how shall the gunner apply and use the data determined?" It is obvious that to point the muzzle of the gun at a fast moving target and fire is a waste of ammunition, a premature disclosure of position and a loss of opportunity to gain prompt fire effect and surprise, with the resultant opportunity to the target plane to maneuver and execute his mission or escape. The gunner must "lead" the target and the lead must not be a blind, haphazard one but must be as accurate as possible, within the time available to determine it. Accurate leads cannot be taken without a sight to indicate them. No suitable sight is at present available. Several sights for moving targets have been improvised, however, which approach, to a limited extent, the features desired. Further effort and study should be directed to this end. A simple, accurate sight, capable of being used with central fire control or independently by each gunner, if necessary, is needed. Any sight used must have a few aiming points or wires representing leads under varying conditions of applicable data.

After every effort has been made to obtain effective fire initially by accurate pointing how can fire be best improved and adjusted? In time of war, of course, fire effect will best be indicated by the actions of the target. A falling plane leaves no doubts—as indeed, does one which continues on its mission, unharmed and undisturbed. In time of peace, however, we must wait until a sleeve target has been examined to determine how effective our fire has been and then we are often at a loss to determine just how and when the hits were obtained. Adjustment of antiaircraft machine gun fire by tracers has been given a rather thorough test both in the field and at Aberdeen Proving Grounds. A study of the 1930 Aberdeen Report indicates that control of fire by tracers alone gave very good results at short ranges but that very few hits (far too few) were obtained at ranges beyond 1200 yards, even though improved tracers of 2000 yards

range were used. As a matter of fact, that hits were obtained at short ranges may be due to the fact that the guns were *laid* ahead of the target by approximately proper leads rather than by tracer control. Even approximate pointing, of course, without any "lead" whatsoever, will obtain a few hits at short ranges. Adjustment of fire, by tracer control alone, beyond 1200 yards range is believed impracticable and the small percent of hits obtained where that method alone has been used indicates that little destructive effect can be expected. Surely no one would contend that we can neglect ranges in excess of 1200 yards. As the range increases, the necessity for accurate pointing and tracking becomes more important and essential. This is true not only because dispersion is greater at long ranges but because errors in pointing are magnified. A gun slightly off in elevation and deflection will obtain few, if any, hits at long ranges. Accurate pointing and tracking is essential and this cannot be accomplished without some sort of sight—however simple it might be. A haphazard swing of the gun in the general direction of the target, especially at long ranges, is a waste of ammunition. The observation of tracers, however, may greatly assist in bringing effective fire on the target, by means of a suitable sight. Tracers are a valuable *aid* to sights but not a *substitute* for them.

How can the observation of tracers best be employed in antiaircraft fire control? Recently some 25 officers were placed in groups to fire .50 and .30 caliber machine guns at a moving target. Three or four guns were fired simultaneously. The officers were told to follow the target with the normal sight on the gun until fire was opened and then to adjust by tracers, watching only the tracers and the target. This is a common method of adjustment of fire by tracers alone. Many of these officers had machine gun experience. A few had fired at moving targets. The results of this firing however were uniformly poor and *not a single officer was able to state that he could identify his own tracers*. While claims may be made to the contrary it is considered doubtful whether few, if any, gunners can definitely identify their own tracers, particularly if other guns are firing at the same target. If the gunner cannot follow his own tracers how can he be expected to bring effective fire on the target, particularly if he has no sight to provide accurate pointing? Admitting for the sake of argument, however, that the individual gunner *can* distinguish his tracers it does not necessarily follow that he can promptly and accurately adjust his fire. The proper determination of the relative position of tracers and target is a problem in itself. Tracers are apt to be very misleading. Not only does the human eye have faulty stereoscopic vision beyond a few hundred yards, but a definite knowledge of the relation of tracer range and target range must be known and applied. Tracers which appear to lead the target a certain amount may result in hits at one point and large errors at another. Adjustment of fire by tracers is a matter requiring expert knowledge and wide experience. It is not con-

tended that some gunners cannot secure good results in those few cases where they can follow their tracers and have had long experience in adjusting with them. Furthermore, every gunner should receive training in this respect for there may be times in which he may have to act alone. But normally the individual gunner will not be able to see his own tracers and even in those cases where he can, adjustment can better be made by an officer or a qualified assistant, from a point central to the guns of a firing unit. An initial lead should first be determined, all gunners instructed to use that lead, following the target accurately with definite aiming points on the sight provided, and fire adjusted by observation of tracers from a central point. In this method attempt is made, first to secure effective fire at once (by accurate determination of data), to have all guns of the firing unit shoot together (by using the same data) and, finally to bring the *sheaf* or *cone* of fire on the target by adjustment from the observation of tracers, the individual gunners changing aiming points on the sights as directed or as they them-

selves may determine, if central control is impracticable in the particular situation at hand. In no case and at no time should the importance of careful pointing be disregarded. An unaimed gun is wasted effort and wasted ammunition.

To summarize, accurate pointing is essential at all times and particularly at long ranges. Accurate pointing is impossible without sights. Suitable sights for this purpose are needed. Good pointing alone, however, will not result in hits if the initial lead be incorrectly determined. Adjustment will often be necessary. Tracers are valuable in this respect as an aid to the sight in accurate pointing, but are not a suitable substitute for it. Fire control by tracers alone is wasteful and ineffective. Adjustment by tracers by the individual gunner is generally impracticable. Tracer control or sights? The answer is "both." The combination of a simple sight and tracer control appears to be the proper solution of the machine gun fire control question at this time.

Cosmopolitan Character of Hawaii National Guard

The nativity tables in the Annual Report of the Adjutant General of the Territory of Hawaii National Guard which has just been received, shows the extreme cosmopolitan character of the personnel of the Hawaii National Guard.

The principal nativities are as follows:

Hawaiian	418
Chinese	186
Portuguese	174
Japanese	169
Porto Rican	148
Filipino	117
American	116
American-Hawaiian	97
Chinese-Hawaiian	74
Korean	23
Portuguese-Hawaiian	22
Spanish	10
Samoaan	5

Radio in the Philippine Islands

By 1st Lieutenant A. D. Whittaker, Jr., C. A. C.

“SHOULD I bring my radio to the Philippine Islands?” has been asked of me so often that I address this little bit of dope to those who are ordered there.

The answer is most emphatically “Yes.” We will consider some general information before applying that Yes too readily.

Stations available to most radio sets are few. Manila is the foremost and, because it is in the Mother Tongue, the best. Chinese stations can be heard but are not an inducement unless you are fond of Chinese music. The same holds true of Japanese stations. The DX fan can rejoice in having logged them but thereafter even his interest has ended. An exceptionally good set may be able to pick up Australia with its English method of broadcasting. Perhaps a very superior superheterodyne might “hook” the Pacific Coast stations but it is doubtful.

For practical purposes Manila is our standby and it is a most excellent station. They were in September 1930, broadcasting exercises from 6 to 7 a. m. Luncheon music from 12:15 to 1:15, afternoon concert from 3 to 5, and from 6 to 11 p. m. live music offered by the various cabarets and hotels in Manila. It is a much better program than one would expect to find. They operate now with 500 watts of power. On December 1 it will be increased to 40,000 watts.

Static seems to be in the mind of every one as the unsurmountable evil. Not so. Static there is but only in certain seasons of the year and then not too bad to get Manila. The rest of the year 100% reception entirely without static is possible. With 40 KW there is no question at all of static at Corregidor 30 miles away.

Now a word about sets. Since there are so few stations the use of a nonselective set such as those of 1927 or 28 is no disadvantage and they are extremely reasonable in the US. If you have a modern highly selective set you are that much better off. The criterion is tone quality. Any set you may now have will be outmoded before your return to the US so take it and sell it when leaving, invest the money in China, and buy a new up to date set when the USA is reached again. Alternating current sets are the thing. Corregidor has 60 cycle 110 volt current. Manila has 220 volt 60 cycle current. For use in Manila a transformer can be purchased to reduce the 220 volts to 110 volts. You will be able to realize 50% of the cost of the set you take if it is of standard make and a recent

model. Direct current battery driven sets are not advised. Batteries are expensive, and storage batteries awkward to charge. Eliminators are entirely satisfactory. The second hand value of such a set is very low.

You can of course expect veneer to peel, transformers to burn out, loudspeakers to quit, and condensers to fail due to the insidious effect of the tropical humidity on any electrical equipment. These ailments apply to any set and are merely the price one pays for radio in Manila. The repair of these things is easily done by service men with not too much cost. If you don't want veneer to peel sell your console set and buy a cheap metal boxed set and bring it. They are most all alike as to internals and performance for tropical service.

The real kind of a set to have is a short wave set with provision for reception in the broadcast band. A shortwave adapter for your present receiver is good provided it uses the radio frequency tubes in your broadcast receiver making a superheterodyne out of your broadcast receiver. An adapter using the audio channel of your receiver only is not so good. The best yet is a self contained set such as the Pilot AC Super Wasp. Another set better than the Pilot but more expensive, is the National Thrill Box with the National Power Pack. With such a set you can scan the earth for your programs. You will have Australia, Singapore, Java, Manila, Holland, England, Bangkok, San Francisco, and the Java-Holland telephone circuit, Australia-England circuit, the US-England circuit and also very rarely and weakly you will have KDKA and WGY. All of the above on fair to very weak loudspeaker volume. I have heard these myself on a homemade rig of no particular merit. It is best to use headset.

The possessor of an amateur radio transmitter will be in his glory at Corregidor. Reasonably consistent contact with the west coast with 50 watts is enjoyed nightly. On 40 meters I was able to contact with the USA as far east as San Antonio, all of Asia and Australia. On 20 meters Europe, South America, and South Africa were reached. It is surely fine DX.

When your Philippine orders come thru, pack up your AC receiver with the rest of your stuff or buy a cheap one and bring it along. Your many, many happy hours of good radio reception will amply repay you.

Cooperation

By Captain Harry R. Pierce, C. A. C.

THE first of November generally ushers in the training season and, as far as training programs and training objectives are concerned, this year, 1930, was no different from any other. Training for caretaking organizations, however, with the ever present piled up work ahead, is, more or less, a very secondary consideration and it was not surprising, in the Harbor Defenses of Portland, Maine to see Coast Artillery troops still working on powder can testing up until Christmas. Times are continually changing but, even for the most adaptable, one event was surprising—the use of Infantry troops on Coast Artillery fortifications, particularly so during this first part of their training period.

During October, information was received that temporary civilian employees were not to be used in excess of 10% of the money allotted for the various purposes. In the Harbor Defenses this dictum affected, principally, the Engineer Preservation and Repair money for seacoast fortifications as, during the first part of the fiscal year, considerably more than 10% had already been spent. This required the immediate discharge of all temporary employees remaining, the replacements to come from the troops. As important Ordnance work had been already well under way for some time requiring all available Coast Artillery troops the necessary replacements could come from only one source, the Fifth Infantry.

This situation was found to result in the most beneficial training for the officers of the Coast Artillery and also, I believe, to the officers of the Infantry. The benefits were derived from two sources: first, and most important—the necessary cooperation to insure smooth running working crews; second—improvement in working methods to insure the maximum efficiency.

In scanning the estimate of Engineer work to be done during the current year it was easily noted that this work fell naturally into two classes, specialized work such as painting, varnishing, carpentry and blacksmithing and non-specialized work such as scraping off old paint, hauling rock and washing walls preparatory to painting. In calculating the man-days available during the balance of the year, from the six permanent civil service engineer employees, it was noted that the great majority of the specialized work could be completed by them by June 30 next. The non-specialized work, then, was assigned to the troop labor.

To turn Infantry troops over to such work would greatly interfere with their training. It could not help but do so. The Commanding Officer, in conference with his sub-fort commanders decided therefore, in order to perform all work most expeditiously, to stress the Engineer work this fall and to leave the fourth quarter open for training. Consequently, the first of November saw two companies of Infantry at Fort Williams, one company at Fort Levett and two companies at Fort Mc-

Kinley, all scraping paint from the iron work of batteries. The Artillery Engineer distributed his six civilians so that each of the above named gangs had two. The duty of these men was to assist in obtaining and keeping sharp all tools, to obtain paint and other supplies and to follow up the scraping with red lead. The Infantry organizations were assigned as units, complete with their own officers. The Coast Artillery officers were placed on a roster by the Harbor Defense Commander and were given such instructions that each working gang was inspected each day by one of them. These officers, in addition to actually inspecting the work were also to assist in every way in offering assistance and advice and, in general, to cooperate.

The actual performance of the work was another problem. The iron work of all batteries had, in the past, been covered with black asphaltum varnish. In some places this iron had a base coat of red lead, in some places a black oxide paint and, in still other places, no base coat at all. Over the asphaltum had been placed the present color paint, olive drab. Such is the consistency of the asphaltum that it will run when warm. It had been thus impossible to obtain a good exterior coat of olive drab. The only solution was to remove the asphaltum and to start anew with a base coat of red lead. Work was first started with plain steel scrapers. Then means of hurrying the work were attempted. The first innovation was a rotary steel brush. This was found to be better but was soon supplanted by a flame thrower. This flame thrower gave out a blow torch flame four inches in diameter and two feet long. The iron work heated with this torch could then be cleaned easily with large putty knives. As a matter of comparison, where one man had previously taken a half day to scrape an iron door he could now do the same job in forty-five minutes.

A still better solution for the iron doors was soon found by use of a lye vat. The blacksmith made three such vats by rivetting and soldering heavy galvanized iron into enormous pans. For future storage these pans were made to nest one within the other but for this work one was sent to each fort. When filled with water and heated the iron doors were lowered therein by use of a differential block and the paint was then removed easily and quickly.

So efficient were the Infantry troops in thus removing the paint that it was soon necessary to detail six Coast Artillerymen and six Infantrymen as painters, to assist the civilian employees in keeping up with the red lead. Due to the lateness of the season no attempt was made to put on olive drab paint.

This was an unusual situation and was met by unusual means and the earnestness and helping attitude of the Infantry cannot be too greatly stressed. It was a pleasure to work with them and to feel that they were working with you.

Current Events Overseas

Edited by Lieut. Col. Herman Beukema, Professor, U. S. Military Academy

IN THE annual crop of critical surveys covering a dismal 1930, commentators agree on two points: first, that this world has so far deflated the extravagant hopes entertained as late as August, 1929, that the year ahead of us is almost certain to be one of improvement; secondly, the world condition of political and economic flux, proceeding from the events of 1914, shows no prospect of early crystallization. In short, stability is still remote.

Among the constructive steps during 1930, looking toward maintenance of world peace and economic stability, we note in chief, the London Naval Conference, the preparations for a World Arms Parley in 1932, the inauguration of the Young Plan, the highly auspicious initial success of the International Bank, recession of the revolutionary fever in China, and various world-wide agreements to curb overproduction of commodities. Revolutions, poverty, disillusionment, the reverse side of the picture—make up the present cosmic headache. Where the basic causes of these troubles are economic, remedies are now being applied or are in preparation. The political causes, notably the refusal of Italy and the defeated Central Powers to accept the decisions of the Versailles Treaty, offer the more serious threats of another world convulsion. History will check the balance and determine whether 1930 marks advance or retrogression in the march of civilization. It is too early for that now. But we can observe the trend of major movements as 1931 opens, and the questions they pose.

Above all, what of Russia? Unsocial, unwilling to cooperate with the capitalistic powers, happy in fact over the disruptive effects of their productive efforts on world economic machinery, these hard-bitten communists are forcing every nation to ask itself "What if the Russian program succeeds?" The elimination of Rykov and his followers, perfecting at last the dictatorship of the proletariat (with Stalin in the single role of "proletariat" in this instance), and the launching of a program to give military training by 1935 to 23,000,000 men annually, give ample proof that Russian leadership will carry through its iron purpose with all the means at its command. For the problems which he presents to rival powers, Stalin blandly proposes two solutions, war or adoption of communism. It may be too early to think seriously of these, but it is not too early to think.

British Empire

United Kingdom. Labor's hold on power weakened further in the past month, as evidenced by its several compromises in the session which recessed December 19. With the left wing radicals refusing to follow MacDonald's leadership, Labor is now wholly depen-

dent on liberal support to remain in office. Out of that situation the Liberals feel certain of the early passage of a law granting proportional representation, a measure which should more than double the present strength in Commons.

No party wants a general election now, least of all Labor, even though it carries the brunt of criticism for these dolorous days in Britain. And Labor must pay the Liberals for the support which postpones that election. Meanwhile, the tide of local and by-elections swings steadily toward the Conservatives.

Sir Oswald Mosley has created a new issue in his demand for a temporary suspension of normal representative government by placing plenary powers in the hands of a super-cabinet of five. Parliaments cannot pull Britain out of her doldrums, according to Mosley, and, unwilling to suggest dictatorship, he still feels that a modified oligarchy may combine the courage, efficiency, and readiness to open again the doors of national prosperity. The country's initial reaction consisted chiefly of invective. But now industrialists and leading Conservatives rally to his support.

In the military field, a development of interest is the reduction of recruiting standards for the crack infantry and cavalry regiments, after it had become clear that no other measure could hold these units to strength. A logical aftermath of the R-101 disaster is a growing demand for a return of military, naval, and commercial air matters to separate administration, and an end of the present Air Ministry.

India. Due largely to the secrecy of the Round Table Conference's deliberations, the exact state of its progress is obscure. Winston Churchill's blistering denunciation of the proceedings gave evidence that results must be satisfactory to Labor and to the Indian representatives. It grows clear that the British government will insist on retaining control for at least ten years of matters of defense, foreign relations, and finance. A difficult problem arises from the inability to determine thus far a satisfactory basis of Hindu and Moslem representation. Only by some proportional method can the Moslems secure representation worth having. Succeeding Lord Irwin, Viscount Willingdon, present governor general of Canada, has been designated Viceroy.

Burma's demand for separation from the new Indian government was acceptable to both the British and the Indians. Scarcely had that step been decided upon when "King Golden Crow," or Saya San, a native backwoods chieftain, started on a campaign of pillage and slaughter which wiped out local and colonial administration over several hundred square miles in the initial onset. A surprise attack on January 2 by col-

onial troops resulted in the capture of Saya San's stronghold and the death of that leader.

The Dominions. Economic crises in Australia and Canada, with a somewhat similar set of conditions in each case, have produced unpleasant threats of separation from the western, commodity-producing areas. In neither case has the situation proceeded beyond the point of verbal explosions. Canada's position, from all points of view, is the happier in that her fiscal position is sound. Australia has followed a spendthrift socialistic policy so long that national bankruptcy is at the door, and may be avoided only if the government is supported in its policy of retrenchment.

Meanwhile, no little hard feeling has developed between Britain and Australia out of the blunt nomination by Premier Scullin of Sir Isaac Isaacs, native Australian, for governor general of that dominion. King George accepted the choice with marked asperity.

ROBERT B. RANSOM,
Captain, Infantry.

Western Europe

League of Nations. Budgetary limitation of armaments won in December the final acceptance forecast by its November victories in the parley of the League Preparatory Disarmament Commission. Ambassador Gibson, representing the United States, fought the thesis to the end, crystallizing his objections in the statement, "We honestly believe that it is far easier to conceal the application of a dollar than the existence of a rifle."

The completion of a draft proposal for the World Conference on Disarmament, which is expected to meet in 1932, marks the end of four years of intermittent effort to that end. No European power has labored harder to secure prompt and sweeping action toward this goal than has Germany. Only by scaling down the defenses of her rivals can she hope for an early approximation of parity in armaments. However, the strenuous efforts of Count Bernstorff, German delegate, to secure a date in 1931 for the final conference, was roared down by Lord Cecil, speaking for Great Britain, and voicing the majority sentiment of the concert.

To an impartial observer it appears that the Disarmament Conference might well take a lesson in co-operation from the success of the Bank for International Settlements, which has released its report on its first half year's operations. It has apparently operated much more smoothly than the Disarmament Conference. Originally, formed for the ostensible purpose of collecting and distributing German reparation payments, this now constitutes less than 20 per cent of the bank's business. Although it may not deal in a foreign currency if the central bank of the country concerned offers an objection, more than twenty transactions in foreign exchanges have been consummated without a single protest. Predictions are already being made in international banking circles that eventually the Bank for International Settlements will solve the question of world gold shortage by acting as a depository for the gold reserves of the central banks.

France. The overthrow of a French cabinet is ordinarily a matter of small moment in that country. Such was the case when Tardieu's second cabinet fell December 4, after an adverse vote in the Senate. Notwithstanding the small weight of that body in the French political system and the existence of a solid majority for his policies in the chamber of deputies, Tardieu chose to resign. Two premiers designate, Louis Barthou and Pierre Laval, proved unable to form a ministry. President Doumergue finally turned to Theodore Steeg, who appeared before the Chamber with a left ministry just before the holidays, and secured a vote of confidence by a majority of seven. Steeg's cabinet remains obviously as a stop-gap, until Tardieu is ready to take the reigns again. Widespread agitation in the past two months for the return of Poincare to active politics ended when the serious illness of that veteran reinforced his refusals.

The death of Marshal Joffre on January 4, after an illness of three weeks, produced a flood of condolences from every quarter of the globe, in which his country's former enemies give full evidence of not only respect, but even affection. None of the great figures of 1914 had a stronger hold on men's feelings than did this gentle, imperturbable soldier who could fight to victory when his whole world was falling about him.

A military development of interest occurred in French laboratories with the production of a new smoke agent in which the principal ingredients are chalk, sulphuric acid, and tar products. Early tests were highly successful.

Spain. The long-heralded revolt burst out in a manner both furious and futile with a series of explosions, from the little Pyrenees garrison town of Jaca to Madrid. The Jaca affair with its proclamation of a Republic December 13, was obviously premature. It proved of real service to the government, which promptly forestalled most of the other scheduled outbursts. The extraordinary mutiny at Cuatro Vientos, Madrid's great military airport, December 15, was the only additional incident of importance. In all cases these sporadic outbreaks were put down with a promptness and thoroughness which suggested nothing of temporizing. The loyalty of most of the regular army, the happy warning given by the Jaca revolt, the indifference of the populace to republicanism, especially so in the case of the peasantry, and above all the native ineptitude of the Spanish for concerted action, were responsible for the failure of the rebellion. However, King Alfonso XIII has promised early restoration of constitutional government, with elections in March.

DONALD A. FAY,
First Lieutenant, Infantry.

Central and Southern Europe

Germany. Socialist support enabled the Breuning ministry to score a major victory at the very outset of the session which opened December 3. True to his promise, Chancellor Breuning placed before the new Reichstag the issue of complete acceptance or rejection of his fiscal measures, which had precipitated the

political crisis last July. Piece meal debate of the twenty-five major reforms involved was avoided through the previous enactment of the bill by decree, under Article 48 of the constitution. Some of the provisions were most unpalatable to the Socialists, but they had to choose between acceptance or a reversion to the political chaos of recent months, with fascist control a strong possibility. Their grumbling support enabled the government to win in this critical test by a vote of 292 to 254.

However, the government remains weak. Fascists, Nationalists, and Communists will stand solidly against it on every vote. Only by constant compromise of party principles can the moderate parties of the center maintain a majority. And compromise is something new in German politics.

Government and general opinion grows increasingly cool to suggestions of a moratorium on reparation payments. German commercial credit would suffer from further agitation of the question, and that at a time when a substantial and growing balance of exports is one of the few bright spots in German economy. With unemployment figures nearing the four million mark, government revenue receipts falling steadily, and serious communist strikes and riots breaking out in the Ruhr district with the opening of the New Year, Germany faces its hardest winter since 1923.

Italy. Military training approaches Mussolini's goal of 100 per cent application in two decree laws issued by the Council of Ministers. The more important of these provides that youths over 18 are to receive two courses in pre-military training, unless physically disabled or residing more than ten kilometers from the nearest training center. Local fascist militia takes charge of instruction, which will be given on Sundays and holidays.

Mussolinic oratory of last month was marked by a singular outburst in which Il Duce, admitting a budgetary deficit of \$45,000,000 to date, placed the blame for the Italian, European, and world economic plights on Wall Street's shoulders. He waxed bitter in his denial that Italy had sought loans in the world markets, attempting thereby to dispose of current news to the effect that the refusal of such loans had clipped his aggressive claws.

Drastic retrenchment in state expenditures appears in recent decrees. Salary cuts of 12 to 30 per cent for government employees, reduction in outlays for all executive departments, are among the measures taken to meet the financial pinch. At best, they are insufficient.

RICHARD P. OVENSCHINE,
First Lieutenant, Infantry.

Eastern Europe

Russia. The Moscow trial of technicians for sabotage attained the ultimate in publicity. Radio carried the proceedings to every corner of the world willing to tune in. A cinema record, will shortly present the high lights of the "confessions" and of State Prosecutor Krylenko's thunder. And hungry, shivering

Russia gets momentary diversion from its misery. The sabotage carried on by the prisoners, at the instance of Russia's foreign enemies if we are to believe the "confessions," received the expected heavy penalties, ranging from death to long terms in prison. And, as also expected, those sentences were commuted and reduced, eliminating all death penalties.

Stalin has achieved the pinnacle of complete dictatorship by elimination of Alexis I. Rykov, premier since Lenin's death. Viacheslav M. Molotoff, one of Stalin's subservient tools, gets the vacant post, while the "man of steel" himself finally takes an office, ordinary membership on the Council of Labor and Defense. Of all the coterie who held key positions under Lenin, less than twenty per cent remain today, and those in minor positions. The furious pace of the five-year plan, and the savage disregard of the nation's simplest needs shown by its pilots in the pursuit of their ends, appears in new decrees, limiting maximum temperatures in all buildings this winter to 48 degrees Fahrenheit; eliminating the individual kitchen and substituting mass feeding, with the additional proviso that only those "accredited" by the State will eat at all; and drafting 2,000,000 women for heavy masculine tasks to supplement the inadequate labor supply.

Poland. Marshal Pilsudski, the Polish dictator, has resigned as premier and has accepted the position as minister of war in the new cabinet. Colonel Walery Slawek, a strong Pilsudski aide, has been appointed to the office of prime minister. It is evident that the old Marshal will continue to control the affairs of state from behind the scenes.

A reverberation of the recent Polish elections appears in startling disclosures of brutal treatment suffered by leading Poles who, opposing Pilsudski candidates in the November elections, were thrust into the Brest-Litovsk prison some weeks before the election day. Meanwhile, Germany appeals to the League of Nations, protesting against Polish methods employed against native Germans in Upper-Silesia for the same object, to secure the election of Pilsudski's candidates.

GEORGE M. BADGER,
First Lieutenant, Coast Artillery.

The Balkans and the Near East

Balkans. An interesting project, inaugurated in 1930, is the formation by Albania, Bulgaria, Greece, Yugoslavia, and Turkey of the Balkan Union. It means an attempt at real cooperation among these states, along the lines envisaged by Briand for the whole of Europe. There are to be a diet which meets annually (this year in Constantinople), a postal union which goes into effect on April 1, a trade council, and a Union flag.

Turkey. Last month witnessed the fall of the three-months old party system in Turkey. In August Fethi Bey undertook, with the approval of President Kemal Pasha, to organize a Liberal party in opposition to the government Popular party, whose leader was Prime Minister Ismet Pasha and whose President was Kemal. It was expected by observers that the Ghazi would

divorce himself from the Popular party, and, as the republic's president, preserve a benevolent neutrality in the intra-party squabbles. This, however, he failed to do. On the other hand, Fethi Bey's strong denunciations of existing governmental policies soon produced him great support from the discontented. During the liberal leader's first political speech in Smyrna, serious disorders broke out. Kemal may have approved an opposition party, but not of opposition. He "gave commands" and all the smiles of the Liberal party, like those of Browning's "Last Duchess," stopped together. Fethi Bey, shunning martyrdom, hastily announced the dissolution of the party.

Financial embarrassment grows acute for the Turkish government, with the failure to meet the latest interest payment due on her foreign obligations, and she is now sounding out London and Paris on a proposition of a charitable reduction of the principal.

Rumania. The death of ex-Prime minister Vintila Bratianu, December 22, disposes of King Carol's most active foe. The dead man is not to be confused with his brother, the potent Ion Bratianu, who died in 1927. Vintila was toppled from power by a peasant revolt in 1928, but until his death maintained his leadership of the Liberal party and opposed the return of Carol to power.

DONALD H. GALLOWAY,
First Lieutenant, Cavalry.

Far East

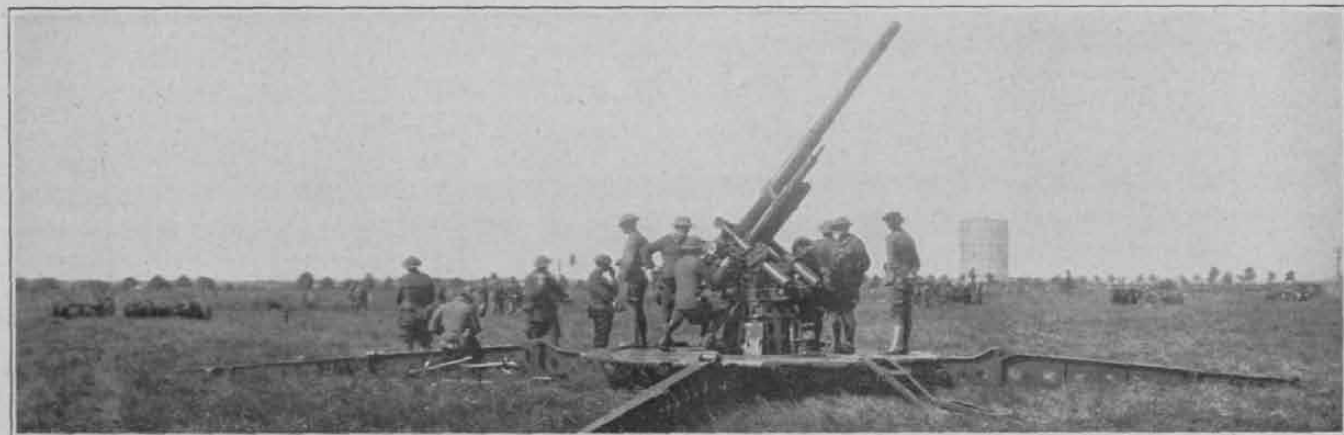
The winter months have witnessed a cessation of major warfare and a continuation of political and economic difficulties in China. However, the commu-

nists or bandits still hold sway in the Upper Yangtse Valley. Frequent reports appear to the effect that President Chiang Kai-Shek is assembling a large army to eliminate them, but kidnappings, attacks on foreign vessels, and massacres of villagers continue. A more serious report concerns the revolt of Mohammedans in Kausu Province of far west China, involving destruction of many villages and the murder of some 30,000 Chinese.

Plans for railroad construction, and the new Chinese tariffs dominate the economic field at present. Information appears that Mukden and Nanking have agreed to permit the Nationalists government to construct two lines paralleling the South Manchuria Railway. Japan, foreseeing ruinous competition for the South Manchuria, which is her property, insists that the new construction is a first step of the Nationalists in their attempt to oust Japan from Manchuria. At most, the construction plan is in the talking stage.

Over the vigorous and unavailing protests of all foreign governments, Nanking has established a well-conceived tariff schedule, designed to foster Chinese industry as well as to raise revenue. Wines, liquors, cigarettes, and in general all luxuries are hit hard, making certain a substantial boost in the cost of living of resident foreigners. Necessities, and especially raw materials required by Chinese industry, bear little or no increase in rates, and in some cases are reduced. A partially compensatory measure is the abolition of the age-old "likin," internal transit tax. Manchuria, however will retain "likin" for another three to six months.

ROBERT E. BLAIR,
First Lieutenant, Infantry.



A 75mm. Antiaircraft Gun in Position at Mitchel Field, N. Y. During an Inspection of the 62nd C. A. C. (AA)

Notes of the Coast Artillery Association

FOLLOWING the enthusiastic organization meeting of the Coast Artillery Association on January 10, the Executive Council of the Association met on January 16 with the President, Major General John W. Gulick, presiding. Other members of the Council present were: Colonel Joseph P. Tracy, Lieut. Col. J. A. Green, Lieut. Col. J. S. Ervin, Major Stewart S. Giffin and Captain John H. Wilson.

The Council elected Major Stewart S. Giffin, Editor of the COAST ARTILLERY JOURNAL, Secretary and Treasurer of the Association. The Secretary then read a letter from the Chief of Coast Artillery directing the Editor of the COAST ARTILLERY JOURNAL to transfer the funds of the COAST ARTILLERY JOURNAL to the Treasurer of the Association. This letter provided that of these funds the amount of \$12,000 be held in trust by the Association and that the income only from this amount be available for expenditure by the Association unless expenditure of any part of it be recommended by the Council and approved by the Chief of Coast Artillery. The Council voted to accept the funds of the JOURNAL under this restriction and the Treasurer was instructed to accomplish the transfer.

The Council then discussed a membership campaign for the Association. The Secretary reported the membership as follows:

Charter Members	2347
Active Members	129
Associate Members	19
Honorary Members	1

It was the sense of the Council that every effort should be made to increase the membership. The Secretary was instructed to prepare a descriptive booklet containing such matter as would serve to clearly explain to eligible prospects the Association, its purpose, objects and organization. This booklet will also contain the Constitution of the Association, in full, and a list of the charter members.

The Secretary was also instructed to initiate correspondence with all known local Coast Artillery organizations with a view to inviting them to affiliate with the U. S. Coast Artillery Association and according them recognition as branch chapters of the National Association. The Secretary will write such Associations as are known to exist asking each to submit a copy of its constitution and a list of membership. There is no complete record furnishing information of many of the local Associations which exist. The officials of all organizations are requested to cooperate with the Secretary and furnish the information requested above without waiting for the formal request. Regular Army officers on duty as instructors are also requested to assist and furnish this information together with the names of their officials. Upon receipt of notice as to the existence of any local Association the Executive Council will examine the constitution under which organization was effected and formerly recognize it as an affiliated branch chapter of the Association. In this connection the Council wishes it understood that it does not wish to cause dismemberment of any existing association or to deter any activities in which it has been interested. It desires cooperation and assistance in increasing the membership list and in carrying out the expressed purpose of the Association.

The Council also considered the present subscription price of the COAST ARTILLERY JOURNAL. The price was fixed at \$4.00 per annum for non-members and \$3.00 for subscribers who are members of the Association. It should be noted that the increased rate does not affect members. Since membership in the Association requires no initiation fee or membership dues it was believed that the special rate to members would be an inducement to eligible persons to apply for membership. It is a material advantage to subscribers to the JOURNAL to acquire membership in the Association.

The Council then adjourned to meet at the call of the president.



COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJ. GEN. JOHN W. GULICK

Executive
COL. H. L. STEELE

Plans, Organization and Training Section

MAJ. J. B. CRAWFORD
MAJ. R. V. CRAMER
MAJ. S. S. GIFFIN
CAPT. J. H. WILSON
CAPT. H. N. HERRICK

Material and Finance Section

MAJ. J. H. COCHRAN
MAJ. C. H. TENNEY
CAPT. F. J. MCSHERRY

Personnel Section

MAJ. G. F. MOORE

Chief of Coast Artillery Continues Inspection

SOME time has elapsed since the JOURNAL has reported upon the inspection activities of the Chief of Coast Artillery. Since the last report General Gulick has visited Panama and all stations on the Pacific Coast. He spent only four days in Panama but visited all the Coast Artillery posts and the antiaircraft defenses on the Zone. He reported the Canal defenses up to par, the personnel alert and efficient in their duties. It required some rapid movement to cover

tional guard and reserve officers at a number of enjoyable functions held in his honor.

As a result of the inspection along the West Coast several recommendations pertaining to the organization of maintenance detachments have been made. He remarked particularly upon the excellent condition of the Harbor Defenses of San Diego and was particularly pleased with one battery at Fort Rosecrans. The sergeant in charge of this battery should be proud of his job. General Gulick returned to Washington on November 29, stopping in Chicago to visit the 202d C. A.

On January 30, he left Washington on an inspection tour which will include Hawaii and the Philippines and will extend over a period of about three months. The following is his tentative itinerary:

Leave Washington	January 30
Arrive San Francisco	February 4
Leave San Francisco	February 4
Arrive Manila	February 23
Leave Manila	March 2
Arrive San Francisco	March 26

Upon his return to San Francisco he will visit Fort MacArthur, Fort Stevens, and Fort Worden returning to San Francisco. He will then proceed in accordance with the following itinerary:

Leave San Francisco	April 9
Arrive Honolulu	April 15
Leave Honolulu	April 21
Arrive San Francisco	April 27

On the return trip to Washington Coast Artillery activities at the locations given below will be visited on the dates designated:

Logan, Utah (Utah State Ag. College R. O. T. C.)	April 29
Manhattan, Kansas (Kans. State Ag. College R. O. T. C.)	May 2
Fort Leavenworth, Kansas (C. and G. S. School)	May 3



Review for General Gulick at Fort Scott. In the Reviewing Line (l. to r.) Col. Geary, General Gulick, General Caldwell

the entire Department in the limited time available and the rest period on the transport bound for San Francisco was well earned.

On the West Coast General Gulick visited all the posts and in addition called at Ninth Corps Area and District Headquarters. He also visited reserve and national guard instructors at the several headquarters. At San Francisco and Los Angeles he was offered an opportunity to meet individually many regular, na-

Lawrence, Kansas (University of Kansas R. O. T. C.)	May 5
Fort Crockett, Texas	May 7
Arrive Washington	May 9

Knox Trophy Winner

THIS article will be devoted entirely to singing the praises of Battery I, 4th Coast Artillery, of the Harbor Defenses of Balboa, which won the Knox Trophy for excellence in target practice during the period ending June 30, 1930. This battery, manning Battery Warren, two 14-inch D. C. guns located at Fort Grant, fired the prize winning practice on November 19, 1929. Four trial and eight record shots were fired at an average range of about 15,700 yards. Three broadside and four bow-on hits were made during the record fire. Four of the eight record shots made hits, three of the four record salvos were bracketing.

The entire elapsed time for firing the record shots was 2.03 minutes, no time out being allowed for any cause during the firing. The average time of each round was about thirty seconds.

The average range deviation was 89 yards and the developed armament probable error was 73 yards. Terrestrial spotting was employed, using the Gray board. The average spotting error was 57 yards. The spotting operations required less than five seconds per shot. The average personnel error was 9 yards. The score made in this practice was 114.5.

Battery I was commanded during the firing by Captain Benjamin Bowering. Captain Bowering is a native of Virginia. He is a graduate of Virginia Military Institute, Class of 1915, and was appointed a 2d lieutenant of Coast Artillery June 4, 1917. He reached the grade of Captain, June 1922, 1920. He is a graduate of the Battery Officer's Course, Coast Artillery School. He became commanding officer of Battery I on June 15, 1929.

Lieutenant Cyril H. McGuire, who served as range officer during the practice was born in Louisiana. He graduated from the United States Military Academy on June 9, 1928, and was assigned to Panama as his first station.

Battery I is one of the oldest organizations in the Coast Artillery, having been organized at Nashville, Tenn., by Capt. George P. Peters, Corps of Artillery, in 1817. It was first known as Company I, 4th Regiment of Artillery but some of us know it better as the 43d Company, Coast Artillery Corps, when it was stationed at Old Fort Trumbull and in the Coast Defenses of Long Island Sound whence it came to the Harbor Defenses of Balboa.

Battery I also participated in the long range firings conducted in Panama last May. These firings were ordered for the purpose of testing means of aerial position finding. This writer will be cautious in assigning credit to Battery I for the successful completion of these tests but the battery had much to do with the efficient manner in which they were carried out. It is understood that other batteries also participated, furnishing personnel to assist Battery I in the firings—in fact, the personnel was drawn from all organiza-

tions in the Harbor Defenses of Balboa. Captain Bowering commanded the composite battery during the tests. The manner in which the shoot was carried out has received the most favorable comment not only from local commanders but from visiting officers from the office of the Chief of Coast Artillery and the Coast Artillery Board.

This long range firing was quite remarkable. Although mentioned previously in the JOURNAL, it might be interesting to state some of the unusual features. The base line, used for safety and checking purposes only, was over 15,000 yards long and was 8,000 yards in front of the battery. The range to the trial shot point was over 40,000 yards. At this distance the maximum angle subtended by the plotting arms was about twenty-six degrees. Although the basic reason for the test was closely connected with visibility the last day of firing furnished ideal conditions for observation. The target was clearly visible from the observation stations, even the color being distinguishable. The Pearl Islands, 30,000 yards beyond the target were also clearly visible. However these conditions were unusual. Only in the tropics would they occur and rarely there.

To give a clear idea as to the excellent work done at the guns it might be mentioned that the developed probable error during the trial shots was only 44 yards. Just happen so, perhaps, because a large number of shots is necessary to measure a practical probable error, but this result does not detract from the good work of the gun crew. The correspondent who furnished the dope on the firing spoke particularly of the work of Captain George W. Dunn, Jr., who acted as plotter during the practices.

The work of Battery I during the aerial position finding test had nothing to do with the award of the Knox Trophy. It is mentioned to prove that this is, indeed, a very excellent battery. A battery is a team. To the officer who is able to get the maximum results from this team much credit should be given but as in any form of coordinated effort, it is the team work which turns the trick. Captain Bowering was ordered to Boston, Massachusetts, as the representative of Battery I, to attend the annual dinner given by the Society of the Sons of the Revolution of the Commonwealth of Massachusetts. Brigadier General Richard K. Hale, the President of the Society, invited Captain Bowering as an honored guest of the Society on January 17, 1931, when he personally received the Trophy.

Assignment of Officers of Other Branches to Air Corps Tactical School

THE Secretary of War has approved the following quota of students, at the next course at the Air Corps Tactical School, Langley Field, Va., of branches other than the Army Air Corps:

Infantry, 2; Field Artillery, 2; Coast Artillery, 2; Cavalry, 2; Signal Corps, 1; Chemical Warfare Service, 1.

To be eligible for detail as students at this School, these officers must be senior Captains or above.

Tentative List of Coast Artillery National Guard Camps 1931

<i>Unit</i>	<i>Commanding</i>	<i>Location of Camp</i>	<i>Date</i>
First Corps Area			
240th CA (Me. N. G.)	Col. G. E. Fogg	Ft. Williams, Me.	July 4-18
245th CA (HD) (N. Y. N. G.)	Col. B. H. Pendry	Ft. H. G. Wright, N. Y.	July 18-Aug. 1
241st CA (HD) (Mass. N. G.)	Col. G. M. King	Ft. H. G. Wright, N. Y.	Aug. 1-15
243rd CA (HD) (R. I. N. G.)	Col. C. L. D. Wells	Ft. Terry, N. Y.	July 18-Aug. 1
242nd CA (HD) (Conn. N. G.)	Lt. Col. Philip Hurley	Ft. Terry, N. Y.	Aug. 2-16
211th CA (AA) (Mass. N. G.)	Lt. Col. H. L. Spencer	So. Sandwich, Mass.	July 25-Aug.
197th CA (AA) (N. H. N. G.)	Col. C. E. Rexford	Rye Beach, N. H.	Aug. 1-15
Second Corps Area			
212th CA (AA) (N. Y. N. G.)	Col. Wm. Ottmann	Ft. Ontario, N. Y.	June 28 July 12
Hq. & Hq. Det. CA (N. Y. N. G.)	Brig. Gen. J. F. Byrne	Ft. Ontario, N. Y.	July 5-19
244th CA (N. Y. N. G.)	Col. L. M. Thiery	Ft. Ontario, N. Y.	July 12-26
Bat. A-261st CA (HD) (Del. N. G.)	Capt. W. L. Torbert, Jr.	Ft. Hancock, N. J.	July 4-18
198th CA (AA) (Del. N. G.)	Col. J. P. LeFevre	Bethany Beach, Del.	Aug. 1-15
Third Corps Area			
213th CA (AA) (Pa. N. G.)	Col. C. J. Smith	Mt. Gretna, Pa.	July 18-Aug. 1
246th CA (Va. N. G.)	Col. A. E. Wood	Ft. Monroe, Va.	Aug. 9-23
260th CA (AA) (D. C. N. G.)	Major W. W. Burns	Cascade, Md.	Aug. 9-23
Fourth Corps Area			
264th CA (Ga. N. G.)	Major Leroy Cowart	Ft. Barrancas, Fla.	July 12-26
206th CA (Ark. N. G.)	Col. E. C. Robertson	Ft. Barrancas, Fla.	Aug. 25-29
252nd CA (N. C. N. G.)	Lt. Col. R. S. McClelland	Ft. Moultrie, S. C.	July 12-26
263rd CA (S. C. N. G.)	Maj. C. C. Smith	Ft. Moultrie, S. C.	July 26-Aug. 9
265th CA (Fla. N. G.)	Maj. M. R. Woodward	Key West Brks., Fla.	Aug. 2-16
Fifth Corps Area			
None			
Sixth Corps Area			
202nd CA (Ill. N. G.)	Col. Chas. C. Dawes	Camp Grant, Ill.	Aug. 1-15
203rd CA (AA) (Mo. N. G.)	Col. T. H. Loy	Ft. Sheridan, Ill.	
Seventh Corps Area			
206th CA (AA) (Ark. N. G.)	Col. E. C. Robertson	Camp Pike, Ark.	Aug. 16-24
Eighth Corps Area			
None			
Ninth Corps Area			
248th CA (Wash. N. G.)	Major E. C. Dohm	Ft. Worden, Wash.	June 6-20
250th CA (Calif. N. G.)	Col. R. E. Mittelstaedt	Camp McQuaide, Cal.	July 11-25
251st CA (Calif. N. G.)	Lt. Col. H. H. Morehead	Ft. MacArthur, Cal.	Aug. 1-15
249th CA (Ore. N. G.)	Lt. Col. C. M. Irwin	Ft. Stevens, Ore.	June 9-23

New Mine Manual Distributed

BEFORE this appears in print the long awaited Manual on Submarine Mining will have been distributed. This manual appears in the War Department Training Manual series as Number 2160-20. The manual is in large part the result of the work of Major F. S. Clark, C. A. C., now attending the Naval War College, Newport, R. I.

The following are the Section headings of the new manual:

- General principles of submarine mine defense
- Description and operation of casemate and electrical equipment
- Submarine mine materiel
- Shore duties
- Duties on the water

Fire control and position finding and mine practice

Two appendices are included:

Utensils and expendable stores; references, forms, and index.

This manual has been awaited with considerable anticipation by mine batteries throughout the Coast Artillery. The stock of gunners' manuals for mine batteries formerly published by the COAST ARTILLERY JOURNAL is now exhausted. The publication of a revised gunners' manual on this subject is not contemplated by the JOURNAL due to the prohibitive cost of production and the limited market available. Therefore it will be necessary for mine battery commanders to rely upon the Submarine Mine Manual as a text for use in the instruction of their organizations.

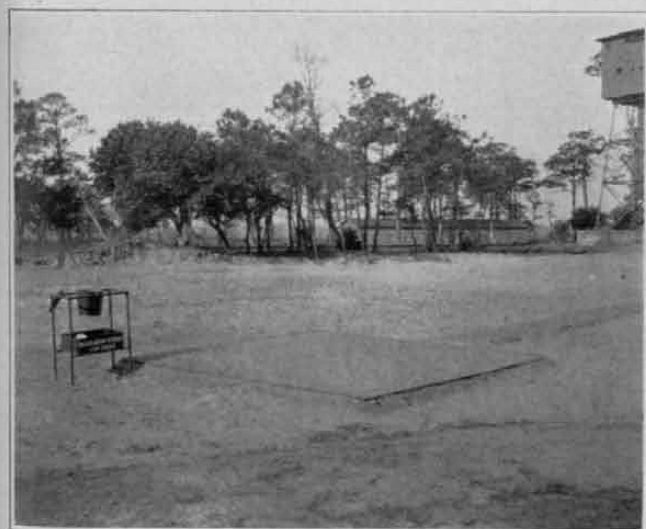
The new manual is not confidential.

Dedication of the Fort Monroe Golf Course and Beach Club

PROGRAM

- 3:00 P. M. Selection by band.
 3:03 P. M. Unveiling first tee-box and naming the first hole. Tee-box to be unveiled and hole named by Mrs. Embick.
 3:07 P. M. Driving of first ball from No. 1 tee by General Gulick.
 3:07 to 3:12 Inspection of first hole.
 3:14 P. M. Unveiling of second tee-box and naming the second hole. Tee-box to be unveiled and hole named by Mrs. Bishop.
 3:15 P. M. Driving of first ball from No. 2 tee by General Embick.
 3:15 to 3:19 Inspection of second hole.
 3:20 P. M. Unveiling of third tee-box and naming third hole. Tee-box to be unveiled and hole named by Mrs. Lecoeq.
 3:20 P. M. Driving of first ball from No. 3 tee by Colonel Ohnstad.
 3:20 to 3:25 Inspection No. 3 hole.
 3:30 P. M. Assembly at Club House.
 3:32 P. M. Dedication of "Beach Club" House and unveiling of name plate by Mrs. J. W. Gulick, assisted by Mrs. A. T. Smith.
 3:32 to 3:40 Vaudeville stunts by Dramatic Club.
 3:40 to 4:00 Refreshments and dancing.

THE odds were 3 to 1 that General Gulick would slice the first ball driven from the first tee on the occasion of the dedication of the new Golf and Beach Club at Fort Monroe. Other odds were 2 to 1 on a "top," 2 to 1 on a 100 yard drive and no takers at any odds on a "fan."



At 3 p.m. on December 22d the entire officer personnel of the post together with wives, the 12th C. A. Band and the headquarters section (mess) of Battery B, 51st C. A. assembled on the Embryonic course. The day was not a typical advertised California day, it was mostly windy, cold and with occasional snow flurries.

Mrs. Embick was selected to unveil the first tee-box

and dedicate the hole to the late Lt. Col. S. M. "Stubby" Seaman. After this ceremony General Gulick, who with Mrs. Gulick, came to Monroe for the occasion prepared to drive the first ball. After several practice swings he drove (he drives with an iron) a right smart ball straight down the fair way. The length of the drive is nobody's business and anyway it was too cold for golf. It should be stated that the winning of the "pool" formed by the Field Officers class was contested by one "donator" on the grounds



that General Gulick's practice swings were certainly not a club length from the ball and there was a reasonable doubt as to whether they were *practice* swings.

After an inspection of the first "green" the gallery gathered around the second tee. This tee is on top of the parapet of Battery Anderson and the green is across both railroad track and road. Mrs. Bishop made the dedication speech at this time, naming the hole "Story" in honor of Gen. John P. Story of Fort Story fame. General Embick was given the honor of driving the first ball off of No. 2 tee. The "odds" on his drive were about the same as above but when it was noticed that he did not intend to remove his overcoat the money became scarcer and since he was definitely under wraps the odds rose. The final odds were 3 to 1 that he wouldn't get across the railroad tracks—and again the book makers lost.

The gallery then wandered down to No. 3 tee which was dedicated to Major Frank S. Harlow by Mrs. Lecoeq. Colonel Ohnstad was selected to make the first drive off No. 3. Here the bookies offered 5 to 1 odds that he would not clear the rough. But it was a bad day for the cynical "pari-mutuals" and Colonel Ohnstad gave all present a pretty lesson in the art of getting a golf ball there.

The spectators, somewhat depressed by the excellence of the drives, were herded to the partially built Bread Club House. The club house is to be constructed of pine logs obtained from Fort Eustis. It is planned to be the recreational center for officers. Mrs. Gulick assisted by Mrs. Smith, wife of Colonel A. T. Smith, Commanding Fort Eustis, unveiled the name plate and dedicated the Club House. A troupe from the Fort Monroe Dramatic Club put on a home-brewed skit

which brought home the relation between golf and (divorce). Mrs. A. T. Winton, Mrs. W. K. Richards, Lt. F. B. Dodge and Lt. J. B. Carroll comprised the cast. The skit was well done but the closing song well maybe it was too cold to sing.

Several people were almost injured in the rush for the frankfurter sandwiches and coffee.

The corps has reason to be deeply indebted to General Embick (originator) Colonel Ohnstad (architect and contractor) and last but not least to the troops of Fort Monroe for a big undertaking, well done.

First Corps Area Proud of Fort Adams CMT Camp

THE excellent article on the CMT Camp at Fort Adams which appeared in the *Coast Artillery Journal* in November has attracted favorable comment especially in the First Corps Area. It is felt that the Editor owes an apology to the author for failing to mention his name in connection with it. He was none other than Major Robert Arthur, former Editor of the *Coast Artillery Journal*, who was on duty with the CMTC at Adams during the summer.

Our attention has been called to the part taken by Major General Preston Brown in the establishment of this camp. While he was Corps Area Commander the CMT Camp at Adams was one of his pet hobbies. He took a personal interest in making the layout of the camp one of the finest in the Army. It cost approximately \$80,000. This money General Brown obtained, no mean accomplishment in times of economy. The kitchen equipment alone cost \$7,500. The JOURNAL takes pleasure in calling attention to General Brown's accomplishment in obtaining the finest CMT Camp in the country at this wonderful location. General Brown began his military career in the Artillery (Battery A, 5th Artillery).

Organization of Chapter of the Coast Artillery Association

THE formation of The New York National Guard Chapter of The Coast Artillery Association went over with a "bang" with charter members at the Armory of the 245th Coast Artillery (N. Y. N. G.) in Brooklyn, N. Y., on Saturday night, January 3, 1931.

One hundred per cent of the Coast Artillery Officers of The New York National Guard were present.

General John W. Gulick, Chief of Coast Artillery, was the guest of honor and the principal speaker of the evening. The details of the meeting were arranged by Brigadier General John J. Byrne, commanding the Coast Artillery Brigade, N. Y. N. G. and Lieut. Col. Allen Kimberly, C. A. C., Senior Coast Artillery Instructor. The meeting was held in the Armory of the 245th C. A. (old 13th) in Brooklyn, thanks to the

courtesy and cooperation of the regimental Commander, Colonel Bryer H. Pendry, C. A. C. (N. Y. N. G.).

General Gulick accompanied by Major James Crawford of his office arrived in New York at 5:00 P. M. He was accompanied to Headquarters of the Coast Artillery Brigade, N. Y. N. G. in the Armory of the 244th C. A. C. (old 9th) where he was received by General John J. Byrne, his active and honorary Staff, and his guest, General Henry J. Hatch, Commanding the 2nd Coast Artillery District and his executive officer, Major W. W. Hicks, C. A. C.

At the conclusion of this reception the party, led by a motorcycle police detachment, motored to Brooklyn for the meeting where the party was received by Colonel Pendry and his Staff.

Dinner was served in the regimental mess hall, songs were sung by the different regiments during dinner and at the conclusion thereof General Gulick addressed the meeting.

During the course of the evening General William Haskell, commanding the New York National Guard came in to welcome General Gulick and made a short address. After dinner a reception was held in the assembly hall where all present had the pleasure of meeting the Chief of Coast Artillery and other distinguished guests.

General Gulick returned to Washington on Sunday night, having spent Sunday with General Henry J. Hatch at Fort Totten.

All concerned were much gratified by the maximum attendance and the enthusiasm shown throughout the meeting and much may be expected of this large and active chapter of charter members.

Among those present were:

General John W. Gulick, Chief of Coast Artillery.
General William Haskell, Commanding N. Y. N. G.
General Henry J. Hatch, Commanding 2nd Coast Artillery Dist.

General John J. Byrne, Commanding Coast Artillery Brig. (N. Y. N. G.).

General Sidney Grant, N. Y. N. G. (retired).

General Washington I. Taylor, N. Y. N. G. (retired).

Colonel F. W. Stopford, C. A. C. (Executive Officer, C. A. Reserve).

Colonel William Ottman, Commanding 212th C. A. N. Y. N. G.

Colonel Lewis M. Thiery, Commanding 244th C. A. N. Y. N. G.

Colonel Bryer H. Pendry, Commanding 245th C. A. N. Y. N. G.

The following officers on duty as instructors with the Coast Artillery Brigade, N. Y. N. G., also attended:

Lieut. Colonel Allen Kimberly, C. A. C. (D. O. L.).

Major Oscar C. Warner, C. A. C. (D. O. L.).

Major Lawrence B. Weeks, C. A. C. (D. O. L.).

Harbor Defenses of Sandy Hook Fort Hancock

By Col. J. C. Johnson, C. A. C.

Maintenance and Training, 50-50

LETTER. War Department, The Adjutant General's Office dated October 18, 1930, states: "In the future, the maintenance and repair of posts will be considered of equal weight with training in determining the efficiency of commands. To this end, programs of maintenance, upkeep, and repair will be prepared, as well as programs of training, in order that both objects may be accomplished through co-ordinated action. * * * The foregoing applies to all * * * buildings, installations, roads, etc., and to all * * * fortifications, emplacements, etc." (and to all training).

Thus, maintenance and training are, by edict, to go hand in hand on a 50-50 basis in so far as *results* and the *final judgment to be passed on the efficiency of the C. O.*, are concerned. The preparation of the most effective plans for attaining this double objective, the most efficient methods to be used in their execution, the relative amount of time to be devoted to each, and the amount and quality of supervision required to insure efficiency and thoroughness in producing the desired results, are all matters for local determination. One thing to be borne in mind however is that, regardless of the plans and methods adopted, the time allotted, and the amount of supervision *intended*, efficiency of execution will seldom, if ever, attain the maximum possible unless the Commanding Officer in person supervises them all in all their aspects and stages.

In general, it is believed that the *task system*, properly supervised, might be profitably adapted to all commands for the purpose under consideration. It is especially adaptable to a command such as this one where the demands for the training of civilian components are heavy, where the installations are scattered over a large reservation, where the maintenance tasks are many, individually comprehensive and varied, and where the garrison is comparatively small and the demand for the economical use of man-power imperative.

In the Harbor Defenses of Sandy Hook the following "task system" for both training and maintenance has been put in effect for the present period of indoor instruction, with the tentative allotment per week of 3 days (including Saturday forenoons) for training, 2 days for maintenance, and a total of 1 day (Wednesday and Saturday afternoons) for athletics and recreation. The two days for maintenance each week are normally Monday and Tuesday but may be postponed until later, and training substituted, if found not to be favorable for outdoor work. If postponed, announcement to that effect is made by the Adjutant, who is the active executive for all administrative features of all programs, at 7:30 A. M., on the days concerned.

In the planning, determination of methods, and

supervision the "Key men" who constitute the *Chain of Responsibility* for same are:

Colonel J. C. Johnson, 7th C. A., Commanding.

Major W. C. Knight, 7th C. A., Executive and Adjutant.

Major C. D. Peirce, 7th C. A., Plans & Training Officer.

Major F. A. Holmer, 52nd C. A. (Ry.), Commanding Regiment

Captain A. J. Bennett, 52nd C. A. (Ry.), Athletic, Recreation, Finance and Camp Mess Officer.

Captain W. S. Bramble, Q. M. C., Quartermaster.

Captain W. C. Thee, Q. M. C., Commanding 1st M. R. S., and Motor Repair Shops.

Captain V. Schmidt, 7th C. A., A. E., O. O., and Commanding Caretaking Detachment.

Captain C. L. Berry, 52nd C. A. (Ry.), Commanding Battery "E."

Captain H. H. Slicer, 52nd C. A. (Ry.), Commanding Battery "C."

Captain W. W. Scott, 52nd C. A. (Ry.), Commanding Headquarters Battery.

1st Lieut. A. T. Bowers, 7th C. A., Commanding Fort Tilden.

Training

All artillery and other instruction, including post schools, is held in accordance with approved weekly schedules carefully planned and arranged by subjects, to show for each, the time allotted, that portion of the subject-matter paragraph by paragraph of the training regulations or manuals to be covered daily, and all instructors and assistant instructors by name. In order to insure that all instruction may be thorough, uniform and efficient, the schedules also designate certain periods during which all instructors, assembled, are "refreshed" in the subject-matter for the day and in the best methods of presenting it prior to its presentation to their classes. In order to encourage "home study," early proficiency, and consequently early "graduation," each student upon passing the required test, is either promoted to the position of instructor, or is relieved from further instruction work. By utilizing as instructors those found to be proficient for such, existing classes are reduced in size to the decided advantage of all remaining students. In all instruction, supervision is exercised *actively* by all concerned in the Chain of Responsibility previously mentioned.

This "task system," giving definite tasks for each day and permitting graduation upon attainment of proficiency, gives to all a clear conception of the exact ground to be covered, encourages initiative and individual effort, and permits sooner or later more thorough concentration of effort by instructors on those most needing it. By the initial planning of the work as finally outlined in the schedules, by the thorough coaching of instructors, and by active supervision from the top down, it is confidently expected to accomplish, in a much less total time, at least as good results as are usually accomplished by the utilization of the entire indoor period for instruction purposes.

Maintenance

(1) Organized Maintenance

All regular maintenance work requiring special details for its execution is done in accordance with an approved consolidated priority list of maintenance tasks for the post, such list being compiled from individual priority lists, revised if necessary, submitted by the various officers who are responsible for the maintenance of buildings, installations, wharves, roads, railroads, utilities, warehousing, emplacements, observation towers, equipment, supplies, cable testing, artillery firing positions, small arms ranges, athletic fields or grounds. This consolidated priority list, or control sheet, is departed from only in case of emergency maintenance required from time to time.

On Thursday of each week each officer who has one or more priority task falling due during the next succeeding calendar week submits in writing to the Adjutant (as in Training) a "Schedule" containing by task, an estimate of the number of N. C. O.'s and privates that can be most economically utilized thereon, the proposed organization of same into working parties by task (and sub-task if any), an estimate of the time required to complete the task, and the name of the officer who is to have general charge of the work together with that of the officer who is to have immediate supervision of its execution. The officer in general charge is ordinarily the officer submitting the schedule. In case he has no assistant for duty as immediate supervisor and can not act as such himself, he requests that one be detailed by the Adjutant for that purpose. As a result, each task is generally immediately supervised by a regimental officer, under the general supervision of the staff or other officer responsible, who reports with the working details furnished.

Thus all maintenance work (as in Training) is directly supervised by an officer. This officer after being detailed for such duty, familiarizes himself, by consultation with the officer in charge of the maintenance task, with all requirements, and is responsible that the necessary tools, implements, transportation (if any) and other essentials are ready for use and are delivered at the place designated at the hour of the day required. This supervision is the one important duty of this officer for that day.

Further supervision of the work is actively exercised (as in Training) by all concerned in the Chain of Responsibility previously mentioned. In this connection, the Regimental Commander and his Battery Commanders are always concerned, first, that the man-power furnished by them is used economically and efficiently and, second, in cases such as road and railroad maintenance and construction, that the work is finished in a workman-like manner. As concerns the use of man-power, if not economically used the regiment is cheated out of training time; as concerns the workman-like finish, the large amount of motor and rail transportation assigned to the regiment suffers if the work is poorly done. Furthermore, this maintenance work being performed by troops of the regimental organizations, it becomes in fact the work of those organizations and should be supervised by their own officers.

As in training, stress is placed, first, on planning and laying out the work and on planning economical working parties, second, on supervision in order to eliminate the customary "back-lash," extravagant use of man-power, lax execution and poor quality of work, and, last but not least, on the training of all personnel in the business-like manner in which any task should be executed.

(2) Routine Maintenance

The foregoing pertains to the larger maintenance tasks requiring special working details. In order to insure routine maintenance by the regularly assigned personnel in storerooms, warehouses, stables, harness rooms, furnace rooms, fire station, barracks, mess halls, miscellaneous buildings, emplacements, magazines, fire control stations, switchboard rooms, and elsewhere and in the stores, supplies and equipment contained therein, the Harbor Defense Commander accompanied by the staff or other officer concerned consumes eleven half days each month on check-up inspections of practically every "nook and cranny" of the Harbor Defenses, including Fort Tilden. Upon his arrival at any building, emplacement or other place to be inspected the caretaker, or other person in charge, presents for inspection his record book which shows the correction and date of same of all defects and irregularities corrected since last inspection. After inspection of the book, it is delivered to the staff or other officer accompanying him who enters all defects as noted during the present inspection for corrective action during the coming month. This method insures methodical correction of defects, gives the personnel in charge a list of same which should not be permitted to occur again, and furnishes a record of occurrences which is at times convenient for reference. In brief, this system of monthly check-up accompanied by positive action in the correction of defects has eliminated faulty lubrication of bearing surfaces in armament and accessories and in shops, plants and elsewhere throughout the Defenses, resulted through corrective preservation in materially prolonging the life of all leather such as harness, head-sets, and instrument cases, corrected the deformation and deterioration of the rubber in head-sets and gas masks, corrected faulty warehousing and arrangement of storerooms, prevented useless deterioration of metal supplies and metal parts of equipment generally, even of iron lamp posts which if neglected in this climate develop rust "warts" the size of a fist, prevented moth destruction of blankets and clothing, corrected improper mess and other sanitation, prevented approximately one million gallons of water wastage per month by stopping leaks and causing replacement of defective plumbing, corrected improper firing methods in heating furnaces resulting in vast savings of fuel, eliminated much electric current wastage caused by the burning of many lights not in use, eliminated many fire hazards, improved appearances, arrangement, and living conditions in barracks, and effected many other improvements not the least of which is the establishment of a decidedly improved sense of responsibility throughout all grades of the service personnel in the maintenance, upkeep, storage.

neatness, and arrangement of the property and premises entrusted to their charge. Incidentally, this sense of responsibility manifests itself conspicuously in the maintenance of squadrooms and personal equipment.

This phase of routine maintenance effected by the regularly assigned personnel and accomplished through the means of constant, methodical and exacting monthly inspections (requiring the forenoons of nearly half of the working days of each month) constitutes no small part of the maintenance and upkeep of a post. It requires effort but is worth it.

(3) Business Maintenance

Just one more phase of maintenance—that of keeping such as the commissary, the post exchange, and the property accountability of the post on a sound and *honest* business basis. This is accomplished (1) by test checks made by the Commanding Officer in person, (2) by special “audits” of commissary, post exchange and property records by a non-commissioned officer who is especially selected for the purpose and who works under the immediate supervision of the Commanding Officer, as his assistant, (3) by inventories of all property on the post including commissary and exchange by specially selected personnel *by double count* and supervised by the Commanding Officer as to methods and accuracy, and (4) by proper warehousing including unit grouping wherever practicable to facilitate inventories both as to time and accuracy.

“The proof of the pudding is in the eating.” The above system since being put in effect has caused little but the most favorable comment by higher authorities and by others as to the condition of the armament and accessories, the improvement of storerooms and warehousing, the economies effected, the improvement in property accounting, and the appearance and condition of the posts in general.

Harbor Defenses of Galveston

Fort Crockett

OUR correspondent, Major G. P. Anderson, furnished us considerable dope on activities in the Harbor Defenses of Galveston but since he seemed possessed of a classification complex his copy reads like an extract from the dictionary. He sent us an excellent air view of the post which we will reproduce provided the mosaic experts of the Air Corps pass it as disclosing no confidential features.

As is well known Fort Crockett is also the station of the 3d Attack Group, Air Corps. From our correspondent's notes we judge that there is considerable operation and cooperation with the Air Corps officer who commands the post. It is pleasing to report that both are of the 100 per cent variety. The maintenance detachment of Coast Artillery enjoys many advantages over those of other maintenance posts due to its association with troops of another arm. The recreation facilities are above the average. Hunting, fishing and golf are among the more interesting field sports which are available to the Coast Artillerymen,

aided and abetted by the facilities of the Air Corps. These are welcome diversions. Otherwise activities would be limited to clean gun, paint gun, trip gun, run 25 K.W. sets, repair emplacements, work on war plans, inspect and bring emplacement books up to date, cut grass, paint (repair) (clean) barracks, cut grass, and keep the powder dry.

Among semi-official activities are classed: Weekend trips to Laredo, Brownsville, San Antonio. We judge the Air Corps cooperates in these too. We vote to eliminate the mildly apologetic designation “semi-official.” It is certainly the duty of a Coast Artillery officer to know the coast line and terrain in the vicinity of his station. The only limiting factors should be the time available and the state of his pocket book, if compelled to travel at his own expense, as he generally is.

In September Major Anderson accompanied the 3d Attack Group to Fort Huachuca where it participated in maneuvers with the Cavalry and Infantry. The Coast Artillery observer states that he has formed a *personal* opinion as to the effectiveness of attack aviation against deployed infantry, cavalry, led horses, troops on the road, wagon trains, and armored cars.

He says he left the Coast Artillery School with the idea that it was practically impossible to form an effective defense of a small area against low flying aircraft but he doesn't think so now. (This calls for comment from the Coast Artillery School.) The effectiveness of rifles, machine guns on infantry mounts and armored cars seemed sufficiently demonstrated in these exercises. The machine gun on the ground has an immense advantage over the one in a fast flying attack plane.

In October our correspondent witnessed an exercise in which the 3d Attack Group operated against 18 condemned planes representing two squadrons on an airdrome about to take off. Three hundred and sixty 17-pound bombs were dropped from a height of 400 feet. The effect was not sufficient to destroy the grounded squadrons but seventy-two 100-pound bombs did the trick. Four hundred feet is the peace time minimum altitude at which a plane may drop an instantaneous action bomb without risk to itself. What the machine guns would do to them at this altitude is not pleasant to think about. But the argument will continue until it is actually tried out (in the next war).

Major Anderson's experiences with the Air Corps impels him to recommend the detail of Coast Artillery officers to serve with the Air Corps for periods of from three to six months. Attention is called to the fact that this is done in some Corps Areas (the Sixth, for one). There is no doubt as to the value of such a detail. Its length of duration we leave to more competent heads.

Finally we are informed that Fort Crockett is a delightful station. Many will agree. It is strongly intimated that the pleasant feeling which exists at this post is due to the Air Corps personnel stationed there. There is no obvious effort to secure cooperation. It just naturally exists.

The 61st Coast Artillery (AA)

Fort Sheridan

EARLY in December the motor transportation of the regiment was moved to the new gun sheds. While the sheds have not yet been entirely completed they do provide cover for the vehicles. Work on these buildings is progressing slowly and by the end of January the motor repair section and paint shop will probably be in operation. Arrangements have been made to secure the use of the riding hall for a short time once a week for indoor drill.

Sergeant Stephen Knowles, Battery B, was retired on December 31 after thirty years service. The entire garrison was assembled in the Post gymnasium where the order for retirement was read. The Commanding General, Brig. Gen. Manus McCloskey, made a short address, presented Sergeant Knowles with a copy of the order, and congratulated him upon his long and excellent service.

Christmas Day was celebrated in the batteries by large dinners. The mess halls were all attractively decorated and the mess sergeants and cooks worked hard for the occasion and put forth some wonderful viands. All messes were inspected by the Commanding General who, judging by his broad smile, was as much pleased as the men who made away with the food. On the day before Christmas Santa Claus appeared at the Post gymnasium and distributed gifts to the kids of the Post, some gifts being as large as the kids.

The regiment is taking a prominent part in Post athletics especially in boxing, where the 61st has usually furnished over 50 per cent of the participants, and in basketball, where "A" Battery is tied for first place out of fifteen teams in the Post league.—J. C. H.

The 69th Coast Artillery (AA)

Fort McClellan, Ala.

THE 69th Coast Artillery arrived at Fort McClellan, Ala., on December 2, with every vehicle rolling under its own power. Colonel Taylor promises a detailed report of the movement as soon as the regiment is oriented. From his letter it appears that he adhered very closely to the schedule announced in the November JOURNAL. The last day's march was 126 miles. This was occasioned by the fact that the regiment remained an extra day at Fort McPherson due to rain. News from the 69th has fallen off since the arrival at McClellan.

Fort McPherson seemed to hit the bull's eye with the antiaircraft soldiers. Altogether five nights were spent at this post. While there, the Corps Area Commander, General McCoy, together with Generals Fiske and Estes inspected and reviewed the regiment. A demonstration which included the emplacing of the guns and search lights was also observed by the general officers. While at McPherson the 69th gave the people of Atlanta a show, going into action for their entertainment on the nights of November 28 and 29. Colonel Greene (Royal K.) reports that these demonstrations were very popular with Atlanta and received with

great interest. They were especially interesting to Colonel Greene's reserve officers, some of whom had never seen an antiaircraft regiment under way.

We also note that the newest antiaircraft regiment has a brand new regimental insignia which has recently been completed by the manufacturer. The shield of the coat of arms is an adaptation of the shield of Maryland, indicating that the regiment was first organized in that state. The crest is a round of ammunition upon which is superimposed a scorpion, indicating that the regiment's permanent home is Texas—or so Colonel Taylor says. We advise changing this interpretation before the Galveston Chamber of Commerce hears of it. The idea of associating Texas and scorpions may not be popular with the home folks. But if one doesn't like the idea it is easy to be persuaded that the scorpion stands for the antiaircraft gunners themselves; that their sting is as deadly to their natural enemies as the sting of the scorpion is to its (natural enemies). The scorpion, in addition to being an arthropod, was also a ballistic engine of warfare used by the ancients. Now we leave the 69th and its insignia to the tender mercies of the wise crackers who will gather, as the vultures of the air, to dip their scorpion-tainted pens into the ink pot and write facetiously their misconceived and distorted ideas of the significance of the scorpion, rampant.

Fort McClellan is a new post—or rather, its quarters are new. Many men of the 69th don't know how to act. They miss the splintered and unsightly floors of Aberdeen and Fort Eustis. They miss the leaks that start in the night and trickle gently into one's ear while wrapped in Morpheus' arms. They miss the soft sifting of the snow through the cracks of self-ventilating windows. But they miss it with pleasure.

Harbor Defenses of Pensacola

Fort Barrancas

"ODD jobs" month at Fort Barrancas, and how many odd jobs can turn up. Battery "A", commanded by Captain Craig, has had for its main mission the cleaning up of the woods in the vicinity of the post and incidentally the supplying of wood for the too numerous fireplaces and stoves. Battery "B", under Captain Bonney, has been working on a railroad at Fort Pickens, and what with the shortage of rails, ties, and fishplates has had plenty of trouble.

Sub-caliber jobs such as the remodeling of Gorgas Hall, the Barrancas dance floor, preparing of gardens and lawns, and general overhaul of armament and camp buildings have used what time has been left.

Incidentally, while mentioning Gorgas Hall, it should be remarked that it has been changed so as to make dinner dances possible and has been redecorated throughout. Barrancas has developed an excellent orchestra through the personal interest of Colonel Lincoln. To improve its playing the band has purchased a radio with which to tune in on famous orchestras and see just how it should be done. It is now by far the best orchestra in these parts.

During the working days military training has not been forgotten. Gunners instruction has been going

on with all men present during the first hour each morning and during the entire morning on Tuesdays. Post schools have carried on and an officers' school has met each Thursday. Courses in riot duty and military hygiene have been completed. The armament has been inspected by the Corps Area Ordnance Officer and the three-inch mobile anti-aircraft guns have been proof fired.

Lieutenant Dice is at present away from the post taking a course in cooking and baking at Fort Benning. Lieutenants McGuire and McLamb have reported for duty from Panama, adding to our large number of ex-Panamaians and also bolstering up our small number of bachelors.

The story of oldtimers about a tunnel from old Fort Barrancas to Fort Redoubt has been run to the ground by Major Wing and Major Chipman, and they say that it is the bunk. They maintain that the so-called tunnel is in reality a breastwork in fair repair and that it also extends on from Fort Redoubt to Bayou Grande. They invite anyone with proof to the contrary to come out in the open and produce it.

211th Coast Artillery, Massachusetts National Guard

"First Corps of Cadets" Holds Time Honored Reception for Governor and Mrs. Ely

AMERICA'S oldest active military unit, the First Corps of Cadets of Boston, on Thursday, January 8, 1931, held a reception and ball for Massachusetts' newest Governor and the first lady of the Commonwealth.

Since the World War, this organization which has been in existence since 1728, has been known as the 211th Coast Artillery (AA), Massachusetts National Guard. In addition to being an active military unit, the First Corps of Cadets has many other functions. One of them is that it acts as the body guard of the Governor of Massachusetts and the Governor himself is the honorary Colonel, the active unit being commanded by a Lt. Colonel. Another function of the organization is that, as far as it is known, it is the only organization permitted to organize a Reserve Officers Training Corps not at an educational institution. The organization was one of the first after the World War to reappear in its resplendent dress uniform. It is understood that special provision has been made to permit this unit to retain this distinctive uniform for official occasions. It is of further interest that this is one of the few units in the United States that owns, and is housed in, a private armory; which special privilege has been granted for many, many years in view of the fact that the City looks on the unit as its defense and the State on the unit as the bodyguard of the Governor.

Five thousand ladies and gentlemen attended the inaugural reception in the First Corps of Cadets armory which marked with proper splendor the inauguration into office of the Governor. Leaders in every walk in military, political and social life greeted the reception line which consisted of the Governor and

Mrs. Ely and Lt. Col. and Mrs. Spencer, the new commanding officer of the 211th Coast Artillery. Preceding the reception Colonel and Mrs. Spencer presided at a banquet in the famous Trophy Room of the armory. One hundred fifty beautiful talisman roses were presented to Mrs. Ely by the enlisted men of the Corps. Colonel Spencer and Mrs. Ely and Governor Ely and Mrs. Spencer stepped on the floor for the grand march at nine o'clock. Following them was the newly appointed Adjutant General of the Commonwealth, Brigadier General Agnew and Mrs. Agnew, and members of the Governor's newly appointed military staff. The armory was decorated in the traditional colors of the Corps, blue and white, and the receiving line was set apart by a row of State flags and the colors of the 211th Coast Artillery. The music was furnished by the organization band which was dressed in the brilliant dress uniforms. An added touch of splendor was given by the presence of the consular group in their distinctive dress.

The reception was as brilliant an affair as has been seen in Boston in many a year and it is felt that the honorable traditions of the Coast Artillery Corps were admirably maintained by this inspiring, brilliant function.

The 245th Coast Artillery (HD) (NYNG)

THE officers of the New York Coast Artillery Brigade (the 245th CA, the 244th CA, and the 212th CA) met on Saturday evening January 3, in the 245th CA Armory for a dinner in honor of the Chief of Coast Artillery. General Byrne, Brigade Commander, presided as toastmaster. The address by the Chief of Coast Artillery, General Gulick, was very optimistic for the Coast Artillery in general and the National Guard in particular. 173 officers were present. Enthusiasm ran high.

Eleven officers of the 245th attended the annual National Guard State Convention in Rochester, N. Y., January 9-10. The Assistant Secretary of War, the Honorable F. Trubee Davidson, Major General Everson, Chief of Militia Bureau, Major General Ely, and Colonel Macnab made excellent talks at the banquet Friday night. Colonel Macnab, Senior Instructor, N. Y. N. G., made one of his interesting talks on his experiences in Mexico with Ambassador Morrow.

January 23 marked another traditional anniversary date of the 245th C. A. (HD) NYNG, and has been designated as American Legion Night, and for the third year in succession the Regiment has been reviewed by the National Commander of the American Legion.

At this affair Legionnaires gather from all points of Long Island accompanied by their bands and fife and drum corps. It serves as a yearly reunion of the World War Veterans.

Major Ralph T. O'Neill, National Commander of the American Legion after reviewing the Regiment, faced the inspiring spectacle of the massed colors of the various posts which preceded the Regiment of Legionnaires.

Prior to the Review, the National Commander was

the guest of honor at a dinner given by the officers of the Regiment. Seated at the guest table with Major O'Neill were the following:

Brig. Gen. John J. Byrne.

Hon. John J. Bennett, Attorney General of New York.

Mr. S. Duberstein, Exalted Ruler of the Elks.

Colonel Alex. J. Macnab, Jr., Senior Instructor, NYNG.

Mr. Edward Neary, State Commander, American Legion.

Colonel Bryer H. Pendry, Commanding 245th C. A.

Mr. Fred Meyn, Commander, 13th Post, American Legion.

Mr. Jas. H. Johnson, County Commander, American Legion.

Major O'Neill was welcomed to the State of New York by Commander Neary to Kings County by Commander Johnson and the welcome of Long Island Legionnaires was made by Attorney General Bennett who is also past State Commander.

The reply of the National Commander voiced the sentiments of the American Legion in their repeated demands for an adequate National Defense as a means of combatting the influence of pacifists whom he divided into several classes: First, the out and out Reds, harmless at present, consisting of misguided individuals who do not know what they want; second, the pedagogue type who while being firm in their individual convictions are nevertheless splendid citizenry and should a crisis arrive would rise in all their wrath to assist in National Defense. He urged all his listeners to place before their representatives at Washington the demands of their respective communities for the enactment of legislation required for the support of the National Defense Act.

The 245th CA will be inspected in their armory by Major L. W. Weeks during the week beginning February 19, 1931.

The largest candidates class for commissions in the history of the 245th CA is receiving excellent instruction this year in various subjects. Fifteen of the class passed the examination in Organization, Subcourse 6, Basic Coast Artillery extension course.

All officers in the brigade are required to be examined before February 1, 1931, in 1st Class Gunners subjects, and by May 1 in Expert Gunners subjects—O. C. W.

The 260th Coast Artillery (AA) (DCNG)

IF the notes of the 260th seem to be preponderantly Battery B notes it is because Battery B has a good publicity officer. So that this outfit will not hog the entire show we will say that the regimental commander, Major W. W. Burns, is considerably on the job. Beginning with the first of the year he is taking a special course at the Coast Artillery School along with Lieut. Col. F. H. Smith who was recently Adjutant General of the District of Columbia National Guard. Colonel Smith decided he had better go to Monroe and

get some book larnin before proceeding to Fort McClellan to take command of the 69th. Major Burns went down to Monroe too. He decided that maybe the School had something special it was going to tell Colonel Smith and that he might as well listen in.

Major Burns returned to Washington to attend the meeting of the Coast Artillery Association and addressed it as the Coast Artillery representative of the District of Columbia National Guard. He was enthusiastic over the possibilities of the Association and particularly approved of closer cooperation among all components. He invited the reserve officers in the District to attend the 260th regimental drills and instruction whenever so inclined. This is an opportunity not available to reserve officers in all locations and should be appreciated.

But to return to Battery B. This outfit calls itself the "Wharf Rats." This designation is due to the location of its armory which is on Water Street along the river, not far from the War College. Its battery commander is Captain Leroy S. Mann, who decided (on a Sunday not so long ago) to conduct a test mobilization. He began to notify the members of the battery about 8 a. m. and by 10 a. m. the last man was notified. Seventy-three per cent of the battery reported for drill at the designated time.

Several amusing tales are being told as a result of the mobilization test. Many believed a riot of some kind was in progress. Others did not know what had happened but lost no time in getting down to the armory. Perhaps the following poem written for the occasion may throw some light on the situation but we prefer to think the author was being facetious:

The Wail of the Private

We know not who decided,
Nor by whom the plan was bred
Nor who put in the riot call
That got us out of bed.

But the Captain called the Sergeants
And the Sergeants called the men,
To be down in the rat hole,
At least by half past ten.

Some were called at eight o'clock,
And some were called at nine,
But all were there at ten o'clock;
Oh boy, but they looked fine.

We all were there in uniform,
Which pleased the Captain well,
And all agreed with Sherman
Who said that war was hell.

We care not when we're called
Be it night or be it day.
We'll always hear that bugle—
You know it might mean pay.

The Coast Artillery Reserve District of Columbia

THE Coast Artillery Reserve Club of Washington is the medium through which monthly conferences of Coast Artillery Reserve Officers in the Wash-

ington District, are held. So far this year, there have been three meetings. At the November, Major R. R. Hendon, Jr., Commanding the 913th Coast Artillery, and last year's Vice-President, was elected President and Capt. John Caswell, Jr., of the same Regiment, was elected Vice-President, while First Lt. R. R. Boyer, 516th C. A., was elected Secretary and Treasurer. At this meeting, it was decided that a campaign of better attendance would be instituted and the results were gratifying for at the December meeting, at which some twenty-five reserve officers appeared—the best attendance on record, with the exception of the visit of Major General Gulick last year.

At the December conference, Major E. B. Gray, the Unit Instructor of the 913th CA, 916th CA and 917th CA, gave a very instructive talk on the "Principles of War." He brought out, citing examples from history before the Roman Empire through to the present time, that war was fought on nine basic principles which had been unvarying through the ages.

At the conference on January 13, two very good addresses were delivered. One by Brigadier General William Mitchell, formerly of the Air Corps, on "National Defense" and the other by Lt. Col. Harry P. Newton, Commanding Officer of the 917th CA, whose subject was: "Is the Commanding Officer a Positive Catalyst for the Morale of His Command?" The Washington Coast Artillery Reserves turned out in force to hear General Mitchell's talk in which he developed fighting tactics, and fighting weapons and material from the days of the Phoenician Phalanx to the possibilities of the present. General Mitchell pointed out that now as never before the vital centers of the nation could be attacked—such attacks being made possible by the speed and duration capabilities of modern aircraft. He contended that there already exist airplanes which can fly at a ceiling level at which they can neither be seen or heard and that due to magnetically controlled torpedoes, they could more accurately destroy their objective than ever before. It was his belief that antiaircraft artillery had a value in that it released aircraft for counter-offensive missions, in that they did not have to defend the lower air in certain areas where antiaircraft artillery exists. His talk was most interesting and instructive and certainly gave those who listened to him something on which to allow their imaginations to work.

Col. Newton's talk was extremely well prepared and, as he pointed out, was based on notes taken during his recent tour of duty at the three-months' course at the Command and General Staff School at Fort Leavenworth. Everybody enjoyed Colonel Newton's speech and the points brought out in his talk were very pertinent and deserving of consideration.

The last two meetings have been attended by several officers from the Chief of Coast Artillery's office—a thing that has not occurred heretofore but which is an incentive to reserve officers to show even more interest than they have shown in the recent past. The reserve officers appreciate the interest shown in them and their meetings by the regular officers on duty in Washington. The plans for the future contemplate

talks by prominent officers of the Coast Artillery and other arms which the committee in charge feels will be just as interesting as the talks given this winter. It is hoped that the Washington conference center will continue to hold the interest of the Coast Artillery Reserve officers and others in the Washington area. Guests from the regular army, the national guard, of other arms are always welcome.

Coast Artillery Reserves Hartford, Connecticut

A BRIEF sketch of the activities under the administrative control of Headquarters, Coast Artillery Reserves, Hartford, Conn., is given this month in order that Reserve officers transferred to this area may have some idea of the units and their allocation. The office maintained in Hartford, Connecticut (525 Main Street) has assigned for Instructor, Lieutenant Colonel John Lee Holcombe, C. A. C., (DOL), and covers the area: Western Massachusetts (Worcester, Hampden, Hampshire, Franklin and Berkshire Counties) and the entire State of Connecticut.

The units assigned are the 543rd C. A. (AA); 618th C. A. (HD), and the 904th C. A. (AA). The 543rd C. A. (AA), is commanded by Lt. Col. Fred E. Stockwell, 543rd C. A. The unit area is the entire State of Connecticut; sub-units being allocated to the cities of Hartford, Waterbury, New Haven, Bridgeport, Norwalk, Norwich, and New London.

The 618th C. A. (HD) commanded by Major Guy G. Allen, is a Harbor Defense Battalion assigned to the Harbor Defenses of Long Island Sound in the event of an emergency. The unit area is Southwestern Connecticut, comprising the cities of New Haven, Bridgeport and Stamford.

The 904th C. A. (AA), commanded by Lt. Col. Herbert A. Dyer, 904th C. A., is assigned to the Western Massachusetts area. Sub-units of this regiment are allocated to the cities of Worcester, Fitchburg, Springfield, Northampton, Amherst, Westfield, Pittsfield, and North Adams.

A well merited promotion of a deserving officer was made on Dec. 9, 1930 by the War Department, when Major Herbert A. Dyer, C. A.-Res., received his promotion to the grade of Lieutenant Colonel, C. A.-Res. Colonel Dyer has been a very energetic officer and has been an asset to the Officers Reserve Corps. Col. Dyer is now assigned to the 904th Coast Artillery (AA) and is now amply demonstrating his abilities as a Commanding Officer in taking this new organization and building it into an efficient Antiaircraft unit. Colonel Dyer served as a 2nd Lieutenant, 1st Lieutenant and Captain of Coast Artillery Corps, Regular Army, from August 1917 to October 1920, and as a Captain, C. A.-Res., from March 16, 1931 to November 20, 1924; as Major, C. A.-Res., from November 20, 1924 to December 9, 1930, the date upon which he received his promotion to Lieutenant Colonel, C. A.-Res.

COAST ARTILLERY BOARD NOTES

Communications relating to the development or improvement in methods or materiel for the Coast Artillery will be welcome from any member of the Corps or of the Service at large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. J. C. Ohnstad, Lieutenant Colonel, C. A. C., President.

Projects Completed During December

None.

Projects Under Consideration

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
679	Test of Rear Band Assembly for Dummy Projectiles	Under test.
681	Test of Fast Towing Target	Test by Navy Department completed. Awaiting test by harbor defense and local boats.
689	Special Target Practice for Training of Aerial Observers	Awaiting completion of target practices.
694	Test of Erosion Charts	Awaiting further tests.
701	Comments on Target Practice Reports	Comments are submitted as reports are received.
707	Test of Artillery Lantern M-1 and Lantern Mask T-1	Awaiting receipt of report of tests conducted by 92d C. A.
727	Standard Single Conductor Mine System	A continuing project.
764	Reminder List for Antiaircraft Artillery Target Practice	Under study.
796	Test of Elevating Mechanism (T4) for 12" By. Mortar Carriage	Under test.
797	Test of Ordnance Tractor Caterpillar "30" M1 ..	Test completed—report in preparation.
800	Test of Radio Direction Finders	Under study.
801	Portable Terminal Center, Telephone Lines of Mobile Artillery	Report being prepared.
806	Use of Glider Targets and Aircraft for Targets Instead of Towed Targets for Antiaircraft Artillery	Under study.
808	Antiaircraft Communications	Under study.
809	Sight Mounting for Antiaircraft Gun, M1918 ...	Under study.
814	Illuminating Device for 12" Barbette Carriage Model 1917	Awaiting result of report of service test.
815	Comments on Target Practice Reports, Fiscal Year 1931	Comments submitted as reports are received.
816	Multiple Mount for Antiaircraft Machine Guns ..	Under study.

PROFESSIONAL NOTES

Air Corps Division Maneuvers

FOR the first time in the history of military aviation in this country, an organization which might rightfully be called a reduced strength Air Division will be put into the air at one time, and under one command will go through a period of extensive maneuvers when an American Air Division is concentrated at Wright Field, Ohio, in May, 1931.

At present the largest units now in the field are the various Groups; although one Bombardment Wing, consisting of a Bombardment Group and its protective Pursuit Group, is now in the process of formation.

The concentration of military aircraft and personnel in 1931 will outstrip any of these provisional organizations of the past in magnitude and will therefore justify its title of Air Division. Such an organization is essentially a war-time one, being the largest air organization that this country would have under one command in time of war; and would be in addition to the various smaller organizations assigned or attached to field armies, corps or divisions. The Air Division to be formed in May will be, of course, the war-time organization skeletonized in planes and personnel by peacetime conditions.

Normally, a full war-time Air Division would consist of over 4,000 officers, almost 30,000 enlisted men, and over 2,200 airplanes. In 1931, it is expected to concentrate 600 officers, 500 enlisted men and 584 airplanes.

The air units at the various Air Corps stations throughout the country, including flights from various National Guard Observation Squadrons, will move by air to Wright Field, Ohio, concentrating there and going through the first phase of their combined maneuvers, this phase consisting of the welding together of many units into the Air Division. The three days allotted before the Air Division moves on to New York will make this no small task, and it is only possible due to experience gained by the Air Corps on previous annual maneuvers or field exercises.

Organizations making up the Division will be as follows:

Headquarters Staff with 50 airplanes.

1 Pursuit Wing, consisting of three Pursuit Groups with 135 airplanes.

1 Bombardment Group, consisting of 6 Squadrons with 40 airplanes.

1 Observation Wing, consisting of 4 Observation Groups with 111 airplanes, plus National Guard Squadrons attached.

1 Attack Group, with 50 airplanes.

1 Transport Group, with 40 airplanes.

The Division will spend several days in the metropolitan area of New York in carrying out the final phases of the Field Exercises, moving on to New England and down to the Chesapeake Bay area as the Exercises continue.

The Division Headquarters Staff will be a mobile flying organization, the staff officers flying their airplanes and accompanying the Division as an integral part thereof on all its movements.

The three Pursuit Groups forming the Pursuit Wing will be the 1st Pursuit Group from Selfridge Field, Michigan; another Group formed by the 59th Squadron from Rockwell Field, California, and the 55th and 77th Squadrons from Mather Field, California; and the 4th Pursuit Group, consisting of the 36th Squadron (newly formed at Selfridge Field) and two School Squadrons from the Advanced Flying School at Kelly Field, Texas. In addition, there will be Pursuit airplanes with pilots from the Air Corps Tactical School at Langley Field.

The Bombardment Group is large enough to form two such organizations, but will be kept as one Group unit throughout the maneuvers. From the 2d Bombardment Group, now at Langley Field, will come the 49th, the 20th and the 96th Bombardment Squadrons. The 11th Squadron will come from Rockwell Field, and, in addition, there will be two squadrons which are to be formed in the Spring which will participate in these maneuvers. This will make six squadrons for the Bombardment Group of the Division.

The Observation Wing will consist of eight Regular Army Air Corps Squadrons and such National Guard personnel as will be enabled to participate. The organization of four Groups in this Wing has not been definitely decided upon and is dependent upon the strength of the National Guard participation. Three Squadrons will come from Mitchell Field, Long Island, New York, and one each from Dodd Field, Fort Sam Houston, Texas; Post Field, Fort Sill, Oklahoma; Maxwell Field, Montgomery, Alabama; Scott Field, Belleville, Illinois, and Crissy Field, Presidio of San Francisco, California.

The Attack Group will be the Third Attack Group now stationed at Fort Crockett, Galveston, Texas, augmented by one Attack Squadron from the Advanced Flying School at Kelly Field. The present squadrons of the Third Attack Group are the 8th, 13th and 90th Squadrons.

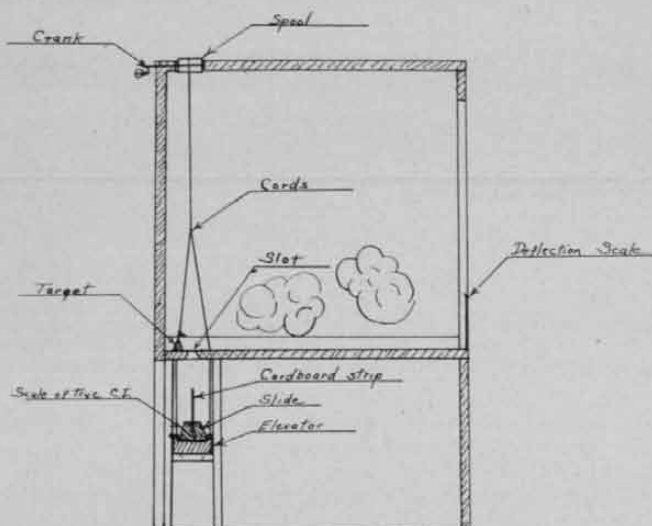
The Transport Group will consist of the forty Transport airplanes available in the Air Corps for this duty. They will carry supplies and mechanics and be under the control of the G-4 Section of the Division Staff, which is charged with transportation and supply.

A Device for Training Spotters

By 2d Lieut. A. J. Lepping, C. A. C.

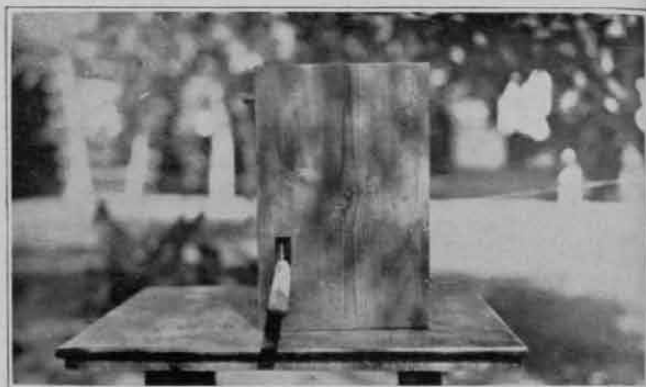
WITH artillery where it is usual to fire four gun simultaneous salvos the problem of training spotting observers becomes a serious one. Usually the number of four-splash salvos that can be observed by spotters during a practice season is very small. As a solution to this problem the impact theatre described below was constructed last year for use in the 41st Coast Artillery.

The device consists of a stage-like box about two feet in length, two feet in height and one foot in depth, the interior of which is painted to represent



an ocean view as seen through an azimuth instrument. Near the rear of the box and across the entire bottom is a narrow slot. Just in rear of the center of the slot is a small wooden pyramid painted red to represent a target. A cardboard strip, the top of which is cut to represent splashes, is caused to protrude through the slot by being elevated in a slide just beneath the slot. Along the top of the slide is a groove which holds the cardboard strip. The slide rests in an elevator, which is connected by cords to a spool at the top of the box. By means of a crank which turns the spool the operator of the device can cause the splash strips to protrude through the slot in front of the target at will.

To allow for changing of strips the slide can be



moved out through an opening in the side of the box until the strips are clear. Across the front and at the bottom of the box is a piece of celluloid about two inches wide graduated like the deflection scale of an azimuth instrument.

On the rear of the slide and exposed to the view of the operator is a scale calibrated to read the same as that on the front of the box, allowing for the parallax between the front scale and the cardboard strip. For the information of the operator the true centre of impact of each group of splashes is indicated by an arrow on each side of the cardboard strip.

The observer is stationed ten feet in front of the device with his eye at a peep-hole on top of a tripod. By means of two strings the observer controls a pointer which moves across the front scale of the device.

Centres of impact and grouping of splashes can be varied by moving the cardboard strips along the slide, by reversing the strips, or by using different strips.

For purposes of training, the operator stands behind the box, places a strip on the slide, pushes the slide back on the elevator and turns the crank exposing the splashes to the observer for a few seconds. While the splashes are displayed the observer sets his pointer at his estimated centre of impact. The operator reads and records the true centre of impact as indicated on the slide opposite the arrow on the cardboard strip, and records the reading of the pointer as set by the observer. He gives the reading of the actual centre of impact from the slide, to the observer, to show what error has been made and records the data so that the progress of each observer from day to day may be observed.

The Radio Telephone

By Capt. H. R. Pierce, C. A. C.

THE Harbor Defenses of Portland, Maine, comprise, at present, three occupied forts: Fort Williams, Fort Preble and Fort McKinley. The two former are on the mainland while the latter is an island. Forts Williams and McKinley are occupied by Infantry troops and Fort Preble by both Infantry and Coast Artillery. All three forts as well as Fort Levett, a pure-caretaking fort, are interconnected by submarine cable.

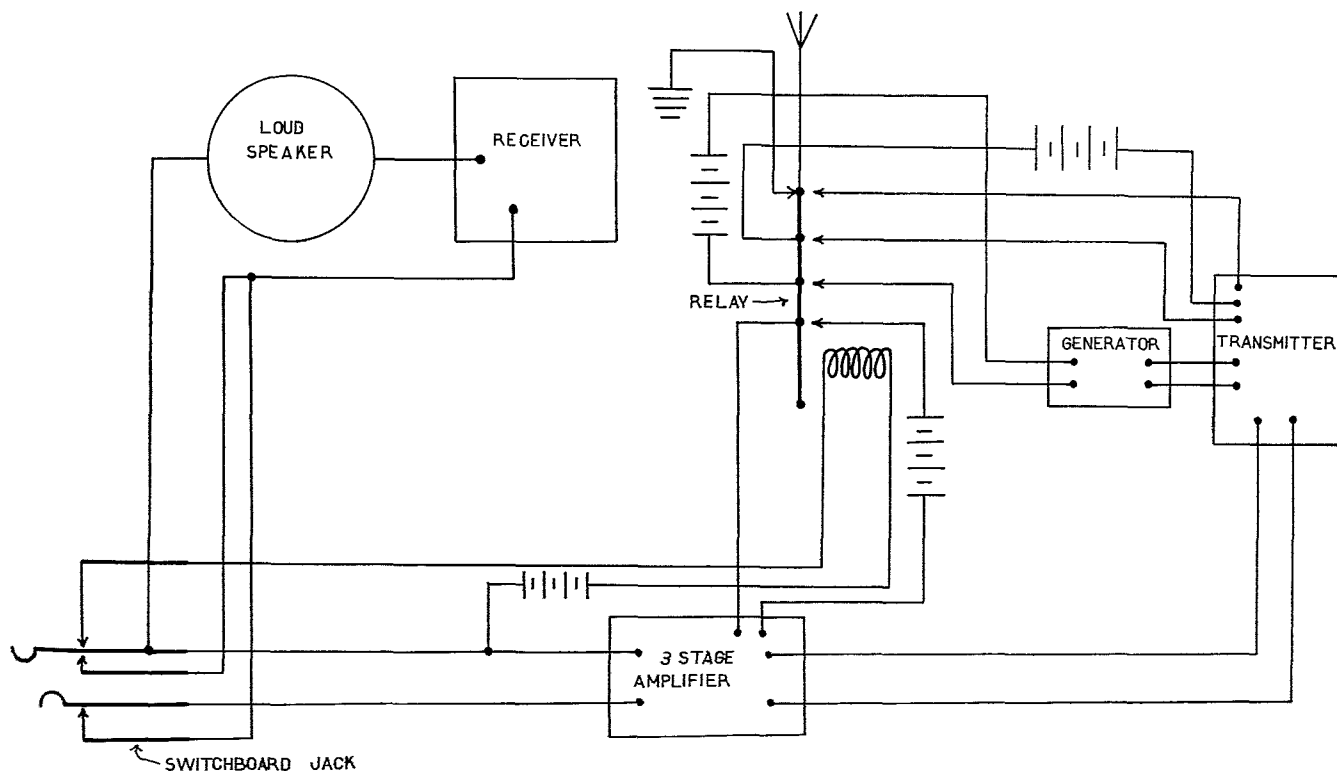
This past summer, due to a change in the cable system, it became necessary to take up and re-lay all the submarine cables connecting the three forts. It was apparent at the outset that intercommunication between the three forts over government cable was to be interrupted for a short or long period depending upon the progress of the work. All three forts were connected to the local commercial telephone service and this was thought to be sufficient for any emergency that might arise during this period. The commercial lines from Fort McKinley, however, left the island by government cable and would not, consequently, be in service when the government lines were not. There would be a time, then, when Fort McKinley would be absolutely cut off from the mainland and from the other forts except by boat. It was to meet this emergency that experiments were carried out to enable radio to be used during the time when wire communication was not possible. The ideas employed and the results of the tests are outlined below.

To anyone familiar with the principles of radio communication it is easy to understand how one may go

to his ordinary house phone and talk with someone in Cuba using radio to span the ocean in conjunction with ordinary telephone lines. The theory is rather easily understood and, for the Radio Corporation with its fine apparatus and expert supervision in practice it is also quite simple. This was, on a very small scale, the same idea we intended to carry out.

The following diagram will show, in general, the system employed at each of the forts, Preble and McKinley. This was composed of three major parts, the post telephone switchboard, a radio receiver and a radio transmitter. By following the diagram the interconnections may be traced. The ordinary switchboard jack was replaced by one having five elements, two for the jack proper make contacts and one break contact. The radio receiver was installed in the switchboard room and was operated by the switchboard operator. When once calibrated, this consisted in turning on the filament, only, the dial settings remaining set without changing. This receiver was in operation all of the time when the system was in operation and was connected through the switchboard jack in such a manner that the sound operated a loud speaker by the side of the operator, thus preventing interference with his other duties, at the same time allowing him to hear an incoming call. When he heard such a call he merely plugged in a regular switchboard plug and the sound then came in to his headset.

Since this radio communication was, of necessity, two way, that is, since the transmitter and receiver must be operating at the same time, it was necessary, in order to prevent the transmitter from interfering with its own receiver, to separate the two by several hundred yards. The transmitter was, consequently,



placed in a building at the other end of the fort. Two lines were put in operation between the switchboard and the transmitter, one to carry the conversation and the other to operate a relay. The conversational line was direct connected to the switchboard jack while the relay line was connected to the jack in such a manner that the insertion of plug would automatically close the circuit and also close the relay. The relay then did four things: it opened the antenna from ground and closed it to the transmitter; it closed the battery circuit to the transmitter; it closed the battery circuit to the generator; it closed the battery circuit to the amplifier. Thus the operation of the switchboard operator, in answering a radio call, of inserting his plug in the radio jack was to place the entire radio system in operation. Contrariwise, when he determined by listening that the call was finished his withdrawal of the plug stopped the operation and disconnected all batteries.

The amplifier, mentioned, was found necessary to obtain sufficient volume for transmission.

The apparatus used was a standard Signal Corps set issued for use on D. B. boats, the transmitter containing two five-watt oscillators. Any good five watt set would have given as good results. The amplifier was a three tube resistance coupled home-made affair and, again, could have been supplanted by any good amplifier.

The first test was made from Fort Preble and consisted in transmitting a test call from one of the office phones in headquarters. The next test was a similar one from Fort McKinley. Both tests were perfect and were picked up, not only by those conducting the test, but by the residents in Portland. Theoretically and practically the system was perfect and had that been all there was to it it would have been a crowning success. I will, however, enumerate some of the subsequent difficulties that were encountered which caused its discontinuance for practical purposes.

In the first place, there was available only one jack as shown in the diagram. At Fort McKinley a snap switch had to be substituted to close the transmitter control circuit. It was found that, in spite of instructions given the switchboard operator he would either neglect to close this switch or once closed he would forget to open it. In other words to make it self operating and fool proof a five element jack was necessary. Tests were, therefore, conducted with a non-commissioned staff officer at the switchboard in addition to the regular operator.

The second great difficulty arose in the transmitters themselves. Several times when the system was all ready for test it was found that either a tube had burned out or had failed to make contact. The first fault required a tube replacement, the second a mere jiggling of the offending tube. The result was that an attendant was required to be on duty at the transmitter at all times to insure radiation.

To summarize—it was determined that this system worked perfectly if the necessary apparatus was available, was properly installed and was properly watched and that, as an experiment, it was satisfactory. Under

the circumstances incident to this station it was decided that the man-power necessary to operate it properly was not commensurate with the benefits to be gained and, consequently, it was never placed in operation for other than test purposes.

The sets remained installed during the laying of the cable and were manned by operators who could be called upon to send regular radio messages should any emergency arise. Even this, however, was not necessary as the cable ship was able to complete its work without putting out the system for more than a half hour.

Secretary of War Organizes New Advisory Body for War Department

UPON the recommendation of General Douglas MacArthur, Chief of Staff of the Army, the Secretary of War has directed the organization of an advisory body in the War Department to be called THE GENERAL COUNCIL. The order creating this organization is as follows:

"For the purpose of periodically reviewing and properly coordinating all major War Department projects, and passing on matters of current policy, there is hereby created under the Chief of Staff, THE GENERAL COUNCIL.

"THE GENERAL COUNCIL shall be composed of the Deputy Chief of Staff, who shall be President of THE GENERAL COUNCIL, the Assistant Chiefs of Staff, the Executive Officer of the Assistant Secretary of War, and the Executive Officer of the Assistant Secretary of War (Air).

"The Adjutant General, the Chiefs of Arms and other Services, the Commandant of the Army War College, and the Chief, Militia Bureau, shall be directed to sit as members of THE GENERAL COUNCIL during the discussion of any important subject bearing upon their individual responsibilities. They may elect to sit during the discussion of any important subject in which they are interested.

"The Secretary of the General Staff will act as Secretary for THE GENERAL COUNCIL. No records will be kept except those necessary to record dates of meetings, officers present, questions considered and action taken. In the absence of the Deputy Chief of Staff, the senior Assistant Chief of Staff present shall preside.

"THE GENERAL COUNCIL will report its recommendations to the Chief of Staff.

"When important matters of General Staff policy are brought before THE WAR COUNCIL, the Chief of Staff will present the recommendations of THE GENERAL COUNCIL, thereon."

The approval of this order marks an important advance in methods of administration in the War Department. This procedure assures closer cooperation and more uniform action on important questions.

Due to the flexibility of its membership, the Council will be assured of having the best evidence and advice direct from the most competent authorities in the War Department.

KEEP YOUR POWDER DRY!



THE old slogan, "Keep Your Powder Dry!", has been handed down to sportsmen so many years that no one would think of storing his ammunition under water. Yet, how many sportsmen realize that the shot-shells exposed to excessive heat are not dry?

In the above illustration, the shot-shells on the left are submerged under water, while those on the right are exposed to a hot radiator—whose heat is so intense that the wooden shelf has been cracked!

The paper tube and wads of a shot-shell contain a certain amount of wax and oils. They solidify at ordinary temperatures, thereby increasing efficiency and flexibility, and also protecting the ammunition in damp weather from the moisture in the atmosphere. In the dry season, the wax and oils prevent cut-offs and other objectionable features. If the ammunition is stored in a hot, dry, stuffy atmosphere, then the solid wax melts and escapes from the paper tubes and the wads, rendering

them less efficient. Furthermore, the molten wax moistens both powder and primer, causing as disastrous results as does water, and also seriously impairing the ballistic performance of the shot-shell.

The modern shot-shells are very dependable servants in rain or sunshine, on the marshes, in the field—or at the traps. But when you put shot-shells away for future use, subject them to the same living conditions as you would choose for yourself—protect from rain, the sun, a hot, dry atmosphere, or moisture. The shot-shells are made to withstand the exposures of your hunting trip. Keep your shot-shells protected from excessive heat and moisture to ensure satisfactory performance.

The du Pont Company with its experience of 129 years and its present resources can supply to ammunition companies the type and quality of powders required to maintain the reputation of ammunition manufacturers and the confidence of the shooters.

E. I. DU PONT DE NEMOURS & COMPANY, Inc.

Smokeless Powder Department, Wilmington, Delaware

Smokeless Shotgun Powders



For information on Target-Shooting, write to National Rifle Association, Barr Bldg., Washington, D. C., and for Trapshooting, write to Amateur Trapshooting Association, Vandalia, Ohio

COAST ARTILLERY ORDERS

Brig. Gen. Harold B. Fiske, U. S. A., from 4th C. A. Dist. Atlanta, Ga., to Panama, sailing New York, March 26.

Col. William F. Hase, from Philippines, to office of the Chief of Coast Artillery, Wash., D. C., instead of to 12th, Ft. Monroe.

Col. Frank C. Jewell, from 4th C. A. Dist., Ft. McPherson, to office of the Chief of Coast Artillery, Wash., D. C.

Col. Allen D. Raymond, retired, because of physical disability, Dec. 31.

Lt. Col. Matthew A. Cross, sailing from New York for San Francisco, Jan. 8, instead of Dec. 17 (assigned to 63d, Ft. MacArthur).

Lt. Col. Frederic H. Smith, from duty as Adjutant General, D. C. N. G. to Ft. Monroe for refresher course thence to 69th Ft. McClellan, Ala.

Lt. Col. James B. Taylor, from 69th, Ft. McClellan, Ala., to the Philippines, sailing New York, May 5.

Lt. Col. Lewis Turtle, from Hawaii, to 52d, Ft. Hancock.

Major Kenneth T. Blood, from Panama to Coast Artillery School, Ft. Monroe, as instructor.

Major Floyd C. Carl, CA-Res., to active duty March 14, as student, C. & G. S., Ft. Leavenworth.

Major George D. Davidson, Letterman Gen. Hosp., will appear before retiring board for examination.

Major Cyril A. W. Dawson, from instructor, Ore. N. G., Salem, to Ft. Mason, Calif., Dec. 30.

Major Robert S. Guthrie, from 11th, Ft. H. G. Wright, to Panama, sailing New York, May 5.

Major Edwin B. Spiller, from Philippines to 6th, Ft. Winfield Scott.

Capt. Delbert Ausmus, from 14th, Ft. Worden, to the Philippines, sailing San Francisco, May 27.

Capt. Philip F. Biehl, from Hawaii, to 12th, Ft. Monroe.

Capt. Raymond B. Bottom, resignation accepted by the President (Home address: Newport News, Va.)

Capt. Edwin C. Callicut, Letterman General Hospital, will appear before retiring board for examination.

Capt. E. T. Conway, from student, Coast Artillery School, Ft. Monroe, to Hawaii, sailing New York, May 5.

Capt. Edward G. Cowen, from Philippines to 69th, Ft. McClellan.

Capt. Leonard R. Crews, from 11th, Ft. H. G. Wright, to the Philippines, sailing New York, May 5.

Capt. Bernard C. Dailey, from Philippines, to 51st, Ft. Monroe.

Capt. Frank A. Hollingshead, from student, Coast Artillery School, Ft. Monroe, to Panama, sailing New York, March 26.

Capt. Albert Mossman, to Hawaii, sailing New York, April 3, instead of Feb. 17.

Capt. Don R. Norris, from 63d, Ft. MacArthur, to 61st, Ft. Sheridan.

Capt. Harry E. Pendleton, from student, Coast Artillery School, Ft. Monroe, to 51st, Ft. Monroe.

Capt. Chas. H. Stewart, Fitzsimons Gen. Hosp., Denver, Colorado, will appear before retiring board for examination.

Capt. Francis S. Swett, from 6th, Ft. Winfield Scott, to 61st, Ft. Sheridan.

Capt. W. H. Sweet, from 6th, Ft. Winfield Scott, to Org. Res., Duluth, Minn.

Capt. Philip Terry, resignation accepted by the President, effective Jan. 10.

1st Lt. Alvin T. Bowers, from 7th, Ft. Hancock, to the Philippines, sailing New York, May 5.

1st Lt. Alan F. Cameron, from 6th, Ft. Winfield Scott, to the Philippines, sailing San Francisco, May 27.

1st Lt. Edward A. Dolph, 62d, Ft. Totten, to the Philippines, sailing New York, January 13.

1st Lt. John W. Dwyer, from 52d, Ft. Monroe, to Hawaii, sailing New York, Feb. 20.

1st Lt. Dean S. Ellerthorpe, 61st, Ft. Sheridan, to West Point.

1st Lt. Hamilton P. Ellis, from Philippines, to 12th, Ft. Monroe.

1st Lt. George F. Heaney, Jr., from Ft. Banks, to the Philippines, sailing New York, May 5.

1st Lt. David S. Latimer, student, Coast Artillery School, Ft. Monroe, to 12th, Ft. Monroe.

1st Lt. Walter L. McCormick, from 51st, Ft. Monroe, to the Philippines, sailing New York, May 5.

1st Lt. Floyd A. Mitchell, from Hawaii, to 12th, Ft. Monroe.

1st Lt. Joe D. Moss, student, Coast Artillery School, Ft. Monroe, detailed aide to Brig. Gen. Stanley D. Embick.

1st Lt. Glenn Newman, from 7th, Ft. Mott, to Ft. DuPont.

1st Lt. Grayson Schmidt, from Philippines, to 51st, Ft. Monroe.

1st Lt. Everett C. Wallace, from student, Coast Artillery School, Ft. Monroe, to 61st, Ft. Sheridan.

1st Lt. Alan D. Whittaker, Jr., retired Jan. 31, on account of physical disability.

1st Lt. Walter J. Wolfe, from 11th, Ft. H. G. Wright to Hawaii, sailing New York, March 18.

2d Lt. James G. Bain, from Philippines, to 61st, Ft. Sheridan.

2d Lt. Oscar B. Beasley, from 62d, Ft. Totten, to the Philippines, sailing New York, May 5.

2d Lt. Harry R. Bodle, from detail in Air Corps, March Field, Riverside, Calif., to the Philippines, sailing San Francisco, Feb. 2.

2d Lt. C. G. Calloway, from 62d, Ft. Totten, to Hawaii, sailing New York, March 18.

2d Lt. Clifton C. Carter, from Hawaii, to 62d, Ft. Totten.

2d Lt. Charles C. Cloud, Jr., from detail in Air Corps, March Field, Calif., to 63d, Ft. MacArthur.

2d Lt. James T. Darrach, from 61st, Ft. Sheridan, to the Philippines, sailing New York, May 5.

2d Lt. Frederick E. Day, from Philippines, to 14th, Ft. Worden.

2d Lt. John B. F. Dice, from 13th, Ft. Barrancas, to Hawaii, sailing New York, March 18.

2d Lt. Edward A. Dodson, transferred to Air Corps, Dec. 11.

2d Lt. Daniel C. Doubleday, transferred to Air Corps, Dec. 11.

2d Lt. John P. Doyle, Jr., transferred to Air Corps, and to Brook Field, Texas, March 1.

2d Lt. Everett C. Dunham, from the Philippines, to 69th, Ft. McClellan.

2d Lt. Carl H. Fernstrom, from 62d, Ft. Totten, to Hawaii, sailing New York, March 18.

2d Lt. Rudolph Fink, transferred to Air Corps, Dec. 11.

2d Lt. William H. Hennig, from Hawaii, to 62d, Ft. Totten.

2d Lt. Robert F. Haggerty, from detail in Air Corps, March Field, Riverside, Calif., to Hawaii, sailing San Francisco, March 10.

2d Lt. Virgil M. Kimm, from Hawaii, to 14th, Ft. Worden.

2d Lt. Paul A. Leahy, from Philippines, to 62d, Ft. Totten.

2d Lt. Aloysius J. Lepping, from Hawaii, to 11th, Ft. H. G. Wright.

2d Lt. Thomas B. McDonald, transferred to Air Corps, Dec. 11.

2d Lt. John E. Mortimer, from Hawaii, to 13th, Ft. Barrancas.

2d Lt. James W. Mosteller promoted to 1st Lt., Jan. 4.

2d Lt. Charles J. Odenweller, from detail in Air Corps, March Field, to Hawaii, sailing San Francisco, March 10.

2d Lt. Willis A. Perry, from detail in Air Corps, Ft. Sam Houston, to Hawaii, sailing San Francisco, March 10.

2d Lt. Arthur C. Peterson, from detail in Air Corps, Ft. Sam Houston, to 62d, Ft. Totten.

2d Lt. Arthur Roth, from Hawaii, to 51st, Ft. Monroe.

2d Lt. Henry E. Strickland promoted to 1st Lt., Dec. 1.

Warrant Officer James L. Will, Asst. Engr., AMPS, promoted to Chief Engr., AMPS, Feb. 1.

Mast. Sgt. Allen L. Greenwalt, Hq. Bat., 6th, retired, Ft. Winfield Scott, Jan. 31.

Mast. Sgt. Jos. Kearney, Ser. Btry., 64th, Ft. Shafter, retired, Jan. 31.

Mast. Sgt. John F. Steffey, Hq. Bat., 12th, Ft. Monroe, retired, Jan. 31.

1st Sgt. William H. Green, Bat. F., 62d, Ft. Totten, retired, Dec. 31.

Sgt. Stephen T. Knowles, Bat. B., 61st, Ft. Sheridan, retired, Dec. 31, 1930.

YOU TELL EM

Reply Reserved

Fort Monroe, Virginia.

The Editor, THE COAST ARTILLERY JOURNAL.

Dear Sir:

I read with much interest Captain Homer Case's clear-cut paper in the November, 1930, JOURNAL, entitled "Men, Money and Mechanical Data Computers," and anticipated additional pleasure in reading the "Comments." The "Comments" proved most disappointing—so much so that I perforce must write you.

Lacking both mechanical and mathematical ability, nevertheless, it seems to me that all sea coast artillery data computers will follow certain generic principles in design and operation; and that one machine will ultimately be developed, which, by changing appropriate cams, discs, scales and links, or what-nots, can be adapted for use with: (1) all calibers, (2) all muzzle velocities (zones), and (3) all forms of position finding systems (horizontal base, vertical base, self-contained base and aerial).

Nor do I believe that the "final instrument" (see page 433, second paragraph) will require *more* personnel to operate than does our present manually operated position finding and data computing system. If it does, "there's something rotten in Denmark," the instrument should be scrapped and a better one developed.

If I am correct, Captain Case sought to show, without getting too technical and too detailed, that:

- 1st: Manually operated position finding and data computing systems are susceptible of leading to mistakes;
- 2d: Data computers can eliminate practically all human mistakes;
- 3d: Data computers will economize on men, not for allocation to other branches, but for other important duties in the Coast Artillery—chiefly to man another gun;
- 4th: Once developed and placed in manufacture, seacoast artillery data computers will prove more efficient than manual system, since computers will:
 - (a) Be more accurate;
 - (b) Be more rapid in their operation, permitting rates of fire restricted only by the armament itself;
 - (c) Save men, or, at least, produce better results with the same number and quality of men.

During my first year of commissioned service I was range officer at Battery Anderson at Fort Monroe. I became convinced then of the splendid opportunities



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for mistakes offered by the manually operated position finding, data computing and data transmitting systems and of the fallibility of the enlisted operators. Sixteen years have passed without offering evidence of sufficient value and weight to change this conclusion, nor do I expect to see it changed ere I die. Just an example. The observer on the DPF (or azimuth instrument, if you prefer) stops his instrument on the third stroke of the bell. He may or may not have the vertical wire on the target or on the proper part thereof. The reader may read the azimuth correctly or incorrectly. If he does his own recording, he may record it correctly or incorrectly, regardless of *how* he read it. If there is a separate recorder, *he* himself may make the same errors. The arm setter may hear the *correct* azimuth correctly or incorrectly; he may set the arm correctly or incorrectly, and he, or his recorder, may record the setting correctly or incorrectly, even though the arm was set correctly. Now suppose the arm setter received or understood the wrong azimuth: he may set what he understood or he may set some other azimuth; the record may show the azimuth actually set or some other azimuth, *even* the azimuth which should have been understood by the arm setter. And so on, almost ad infinitum. Checking records made at drills and target practices must be based on the hypothesis that such records are *ipso facto* correct, or nearly so, and that they indicate what was *actually* done. They may or they may not be records of *actual* events. Hence, it is not unusual for me to distrust records. I am inclined to believe that Captain Case's assumption of a probability of 1 in 100 (0.01) for each separate mistake favors the enlisted operators and not events as they occur.

Artillery Notes No. 39½, published about 1915 or 1916, offers abundant testimony of the erroneous ways of reasonably trained, peace time, coast artillerymen. This confidential document, reports, among other items, a mortar practice fired with the object of sustaining fire at moving targets following curved courses. The summary shows 20 errors made by the range section in firing 47 rounds, 28 of which were fired in 14 salvos. To quote (page 15):

"It is apparent at a glance that a great many errors were made in the range section, and the cause of these errors deserves consideration. Such errors are rarely seen at drill. Subcaliber, or ordinary target practice, and the work of this company during the entire drill season was excellent. This practice was out of the ordinary. A strain was placed on the whole battery such as it had never borne before and one which only an unusually difficult practice or action could bring out. The range section was overworked and could not shake off the feeling of the great responsibility which rested upon it. These are human failings and they are bound to be met in action, which is the true object of our training. On the other hand, the pit and ammunition sections worked well in spite of the added burdens.

which were due to changes in projectiles, the combinations which had to be made to supply powder charges, and changes in these charges due to relays. No error was made in this service, although this problem purposely involved using what was left from the three previous firings. The effects of such firing acts in entirely different ways on men engaged in mental work and men engaged in physical work. The former are strained and depressed, while the latter are decidedly stimulated."

As matters stand, seacoast artillery position finding, data computing and data transmitting systems are far too much exposed to errors. Anything which will cut down or eliminate from such systems the possibility of mistakes made by the operators is a step in the right direction.

It stands to reason that mechanical, or electro-mechanical, data computers with self-synchronous transmission will prove more accurate and more rapid than manually operated data computers and transmission devices. I rate the saving in men as secondary, to the increased rate of fire permitted for armament capable of firing as rapidly and as often as up-to-date, corrected data is set.

The last semi-annual progress report on development work submitted by the Coast Artillery Board (November 26, 1930) states, in part, as follows, relative to seacoast artillery:

"A continuous data transmitter with self-synchronous transmission has been developed and is to be manufactured."

* * * *

"A seacoast artillery data computer and ballistic computing device suitable for either IIB, VB, SCRF or airplane ranging, is under construction."

The picture previously presented of the possible operators' errors in the manual operated systems is not intended to convey the idea that the human race is hopeless. On the contrary. Human genius invents, discovers, designs and constructs data computers and self-synchronous data transmission. But every one is not a genius. Moreover, while perseverance and concentration on details in training will reduce the frequency of personnel errors, nevertheless such errors can not be entirely eliminated, and in time of stress and fatigue are liable to increase in magnitude and in frequency. Nor should reliance be placed entirely on data computers and on electric data transmission (though we do rely on the telephone). We must be prepared to operate with manual systems and must train accordingly, even after the adoption of computers and of self-synchronous data transmission throughout the seacoast artillery, both fixed and movable.

My artillery imagination pictures a battery of 6-inch seacoast guns on railway mounts, elevating to 70 degrees, with armored cars containing self-contained range finders and data computing machines, ammuni-

tion cars and armored (?) locomotives, all moving up and down suitable coastal stretches (Examples: the shores of Long Island Sound, and the Jersey coast from Sandy Hook to near Barnegat Inlet), halting to place outriggers, fire on suitable targets and move on to other targets or to cover, as the situation may require. With such batteries, equipped with self-synchronous data transmission, there is just the same liability for breaks or interruptions as exists for breaks in the air hose of the brakeing system, plus the added sensitiveness of the electrical features.

I regret the tenor of your "Comments." If they were meant to stir up controversies, "even to the point of acrimoniousness," then possibly you may have succeeded, though no acrimonious discussion is of much value because of the bias generally engendered. Discussion of worthwhile subjects is certainly to be encouraged, especially by those who write clearly, logically and readably.

To me, Captain Case's subject offers no controversy whatever. It is axiomatic, or should be, that data computers, complete with ballistic and adjustment correction computing machines and self-synchronous transmission devices, will be developed, adopted and used by our seacoast artillery.

Very sincerely,

WM. COOPER FOOTE,

Major, C. A. C.

The Editor, The COAST ARTILLERY JOURNAL.

Dear Sir:

I should appreciate your publishing the following as an open letter in the JOURNAL:

"To all Coast Artillerymen.

The first contribution of \$3.00 to the Corregidor swimming pool arrived November 30, 1930. It was from Captain G. R. Owen. May he have long service at Fort Mills, the most interesting and beautiful, and the largest of the Coast Artillery stations. No better prospect could be wished for any officer.

We have raised approximately \$800.00 by various means, and an assessment on officers present at Corregidor will bring the local garrison's contribution to a total of about \$1500.00. When this amount has been doubled, we shall feel justified in starting the work.

We wish to remind all officers, who have not contributed by the date this reaches their attention, that the present garrison is contributing more than is asked of the balance of the Corps; also, that about 50% of us will be gone before completion of the work. That is, we are doing the work for those who are to come, rather than for ourselves.

It is a good cause—back it."

C. E. KILBOURNE,
Brig. Gen., U. S. A.

"Odsbodkins and Gadzooks!

Where in Christendom is Fancy Bot
School?" Snorteth the old soldier
as he strugglenth over a map problem

Precious seconds that pass while
he frets and fumes would be
saved by consulting

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BOOK REVIEWS

THE REMINISCENCES OF A MARINE, by Major General John A. Lejeune, U. S. Marine Corps. Illustrated with Official and Personal Photographs. 488 pp. Dorrance & Co., Philadelphia. \$4.00.

Written in clear, simple English, this is an interesting account of a particularly colorful and comprehensive career in the Naval Service of the United States.

The brief account of the writer's early youth in Louisiana in the period immediately following the Civil War is an arresting story of the tragic era of the Southland that is rapidly fading from our national consciousness. The many episodes in the active life of a Marine, serving under the American flag in Samoa, Cuba, Porto-Rico, Panama, the Philippine Islands, Mexico, France, Germany, Haiti, Santo Domingo, and Nicaragua, are told in an unassuming manner, but never fail to hold the interest of the reader. Particularly dramatic is the account of the wreck of the U. S. S. *Vandalia* at Apia, in which the author almost lost his life.

The frequent personal allusions to his numerous relatives, which are scattered throughout the book, while revealing his strong, clannish trend and a deep sense of kinship, detract somewhat from its literary merit.

Although the book was written for the general public, real gems for the military student will be found in the chapters dealing with the Battle of Saint Mihiel, the Battle of Blanc Mont Ridge, the 2nd Division in the Meuse Argonne, the March to Germany, and the occupation of the Rhineland. Not only are they historically accurate but they cover these actions from the viewpoint of a division commander who presents some of the actual problems confronting a commander in battle, and indicate his successful solution of these problems.

Any military student of American participation in the World War will suffer a real loss if he fails to read the four chapters covering the period in General Lejeune's career during which he commanded the 2nd Division in action.

== == ==

NORTHELIFFE. An Intimate Biography, by Hamilton Fyfe. 357 pages, illustrated. Published by the Macmillan Company. Price \$4.00.

Alfred Harmsworth, publisher, later Lord Northcliffe of the British peerage, lives again in the skillfully written pages of this excellent biography. It tells the story of Northcliffe's rise to power through hard work and the application of revolutionary methods in popularizing his newspapers. The use that he made of this power before, during, and after the war is related in a way that sheds fresh light on matters of absorbing interest. The chapters devoted to his activities as head of the British mission in United States, his rejection

of cabinet office, and his handling of propaganda to undermine morale in the Austrian and German armies, give intimate details of Northcliffe's life at the turning point of his career. From them we can get a better appreciation of how well Northcliffe served his country and the Allied cause. His failure to grasp opportunities for greater usefulness, and the episodes that foreshadowed his tragic end, are given with keen insight and sympathy which arouse great admiration for the author.

The book should appeal strongly to American readers, not only because Northcliffe was widely known and admired in the United States, but also because the story of his life is a fascinating record of a self-made man who achieved great success in his particular field. Twenty years of association with Northcliffe, sympathetic understanding of his personality, and masterly skill as a writer, have enabled Hamilton Fyfe to produce a book which we unhesitatingly recommend to our readers.

== == ==

THE ORIGINS OF THE WORLD WAR, by Sidney Bradshaw Fay, Second Revised Edition; two volumes in one. 577 pages. The MacMillan Company, New York. \$4.00.

The second edition of Professor Fay's scholarly study is a revision of the original text done in the light of the wealth of documentary material on the origins of the World War made available to the public since the publication of the first edition. The author states that he did not find it necessary to modify the chief thread of his narrative or his general conclusions. The evidence now available, the author holds, compels abandonment of the Treaty of Versailles dictum that Germany and her allies bear the sole responsibility for bringing about the war. In Professor Fay's opinion, Austria was more responsible for the immediate origin of the war than any other power. Germany, he believes, was a victim of her alliance with Austria. Nevertheless, Germany, the author holds, did honestly endeavor to avert the conflict. Russia was responsible because of the encouragement she gave to Serbian agitation. In the case of France, the author gives a Scotch verdict—not proven. The guilt of England is one of nonfeasance rather than malfeasance. By taking a definite stand early in the crisis for either neutrality or alignment with the Entente in case of war, the British government, in Dr. Fay's opinion, might have prevented the war. Belgium and Italy are completely exonerated.

The book is a detached, impartial, judicial investigation of a highly controversial subject and is an invaluable scientific contribution to the literature of World War history. Although one may not agree

with Professor Fay in all of his conclusions, the book should be read by everyone interested in the question of war guilt and the immediate origins of the World War.

=====

KAISER AND CHANCELLOR, by Karl Friedrich Nowak; Translation by E. W. Dickes. 290 pages. The Macmillan Company, New York. \$3.50.

The author presents in this volume a biographical sketch of the German ex-Emperor based upon official documents, confidential memoranda, and other material placed at his disposal by the Kaiser himself. The major portion of the book is devoted to the relations between Emperor William II and his chancellor, Prince Bismarck, and culminates in the latter's dismissal as pilot of the ship of state.

The author states that the ex-Emperor examined the manuscript before publication, but refrained from any sort of objection to its contents. Although the spotlight focussed upon the Kaiser frequently shows him up to disadvantage, the book, on the whole, seeks to vindicate his reign. The appendix contains a number of interesting documents and excerpts of press references to Emperor William during the first two years of his reign. The numerous illustrations are reproductions of photographs and portraits from the Kaiser's private collection, with descriptive titles in his own handwriting.

The book is well written and should appeal to those who are interested in the personalities discussed. It throws an interesting sidelight upon the history of the period which it covers.

=====

THE GENESIS OF THE WORLD WAR, by Harry Elmer Barnes, PhD., Third Completely Revised Edition; 754 pages. Alfred A. Knopf, New York.

The author presents an introduction to the study of the problem of war guilt on the basis of documentary evidence published by the various governments since 1917. Believing that the truth about the causes of the World War is one of the liveliest and most vital issues of the day, the author approaches his theme in a frankly controversial spirit and challenges current misconceptions which owe their origin to wartime propaganda and falsehoods.

Dr. Barnes sees the chief roots of the war in Alsace-Lorraine, the French revenge aspirations, the Near East, and Morocco. He charges that a plot was hatched by Poincaré and Iswolski, the Russian ambassador in Paris, and traces its development from 1912 to the assassination of the Archduke Franz Ferdinand. He produces a mass of documentary evidence in support of his charge that this atrocity was planned by the chief of the intelligence division of the Serbian general staff, working in collusion with the Russian military attaché at Belgrade, to furnish the necessary spark to kindle the fire in the Balkans, which, it was hoped would lead to the goal of the Franco-Russian conspiracy.

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author points out that President Wilson, by permitting England but not Germany to violate international law promiscuously, not only invited the very reprisals which inevitably followed, but actually failed to observe himself that neutrality which he had enjoined upon his country. By a mass of cumulative evidence, the author shows that President Wilson was actually intent upon entering the war on the Entente side as soon as public sentiment in the United States would support such action.

The author severely criticizes the conduct of Ambassadors Page and Gerard and charges them with having contributed materially toward the entry of the United States into the conflict. Professor Barnes' scholarly book must be read by every serious student of the causes of the World War.

= = = =

EUROPE SINCE 1914, by F. Lee Benns. 671 pages. F. S. Croft & Co., New York.

Aiming to provide the general reader and the student of history with an introduction to the events and changes which have taken place in Europe since 1914, the author devotes the initial chapter of his comprehensive work to the origins of the World War. Three succeeding chapters contain a sketchy outline of the progress of the war; and two more, which complete Part I, cover the period of the Armistice, the disintegration of the Austro-Hungarian Monarchy, and the German Revolution. Part II details the work of the Peace Conference and the liquidation of the problems presented by the war, while Part III devotes ten chapters to the national reconstruction of the New Europe.

The author's contention that entangling alliances were probably the most important underlying cause of the World War disregards the fact that these alliances were but the outward expression of still more profound and deeper-lying economic and political causes. His charge that "militarism" and the "terrible time-tables of European general staffs had far more to do with the actual outbreak of the World War than the deliberate decision of any one government," merely reiterates the fallacious argument of pacifists.

The author has undertaken a sizeable task and, on the whole, has acquitted himself creditably. He presents a vast array of facts, and strives to be fair and impartial. He is generally accurate and always interesting. The book is recommended to those interested in recent developments in Europe.

= = = =

THE KING'S MINION, by Rafael Sabatini. Houghton, Mifflin Co., 1930. 443 pages. \$2.50.

This is another of Sabatini's swashbuckling tales, easy to read, and giving a clear picture of life in England during the reign of James the First. There are the dashing hero and the lovely heroine and a host of other characters, all against an historical background. Love, politics, and necromancy are interwoven, and though the result is a readable book, this reviewer does not believe it measures up to some of Sabatini's earlier work.

OUTLINES OF THE WORLD'S MILITARY HISTORY by Lt. Col. Wm. A. Mitchell, Professor of Engineering, U. S. M. A. Infantry Journal. 1931. 744 pages. 260 illustrations, \$5.00.

Colonel Mitchell's critical survey of the Strategy and Tactics of the Great Captains might have been called "The Do's and Dont's of Successful Military Leadership," but it is much more than that. It discusses the causes of the wars, the character of the troops, their organization and training, the staff systems, signal work, medical science, the weapons, and the military engineering involved as well as the tactics and strategy of wars since the beginning of recorded and authentic history.

He says, "The military historian sees in the army of Genghis, not a numberless horde, but a strong military organization, highly mobile, well officered, commanded by one of the world's greatest military leaders. There was nothing in the world to compare with it. * * * The Mongol strategists were in a class with great leaders Asia produced these wonderful generals [Genghis, Chepe and Sabutai]; and it may produce similar generals in the future. * * We should study the results obtained by Asiatics under the limited instruction of Genghis and a few others, and realize that similar leaders may arise in the future."

Primarily designed as a basis for further study of military history, *Outlines of the World's Military History* more than fulfills its purpose. Colonel Mitchell has described the events selected so as to bring out the reasons for the successes and the failures of great military leaders and to emphasize the method of studying military history.

When hastily leaving the field after the disgraceful battle of Bladensburg, James Monroe said to President Madison, "We should leave military matters to military men." The author of the Monroe Doctrine did not mean Military men who are ignorant of the principles of strategy and tactics as employed by men who won battles.

Much is learned from a critical study of military history. A study of *The Outlines of the World's Military History* is interesting and profitable, not only to the professional soldier but to diplomats, statesmen, and to private citizens, particularly to those civic leaders whose interest in the national welfare impels them to join the National Guard and the Organized Reserves.

It should be in the library of every officer who seeks to extend his professional knowledge.

= = = =

A REFUTATION OF THE VERSAILLES WAR GUILT THESIS, by Alfred von Wegerer. Translated from the German by Edwin H. Zeydel. Introduction by Harry Elmer Barnes. Alfred A. Knopff, New York and London. (1930).

The author has devoted himself since 1921 to the study of the causes of the World War. He asserts that the Versailles Treaty has created conditions that are not only bad, but unjust and unbearable; that the harsh terms of the treaty were based on the false ver-

dict of Germany's guilt; and that the moral as well as the material interests of Germany require that the verdict be set aside. The danger of war in Europe cannot be removed until the unjust penalties imposed by the war treaties are revised.

The thesis of the book is that the judgment rendered against Germany at Versailles is untenable. In the closing sentence of Professor Barnes' introduction we read the startling assertion that, "Properly perused and assimilated by the thinking people of the western world, this book would do more to further world peace than the combined armies and navies of any ten existing nations."

The text presents the documents by which the Peace Conference set forth its accusation of the guilt of Germany, and these the author takes up in turn and endeavors to refute, point by point, all the accusations and judgments of the Allied Powers. Every bit of evidence is critically examined, and the conclusions subjected to the light of information available today.

On the basis of the presentation of his own case, the author fails to establish the innocence of Germany on all specifications. If Germany was not guilty of deliberate aggression, she was at least outmaneuvered in the diplomatic jockeying that preceded the clash of arms, and the critical reader will feel that she can certainly not be acquitted of intolerable arrogance. But enough of the charge is refuted to convince the unprejudiced student that Germany was not solely responsible and that she is entitled to a revision of the Versailles verdict.

== == ==

MILITARY OPERATIONS, EGYPT AND PALESTINE, FROM JUNE, 1917, TO THE END OF THE WAR, compiled by Captain Cyril Falls. Maps prepared by Major A. F. Becke. His Majesty's Stationery Office, London. Price (Parts I and II) £1 net; Case of Maps, 10s net extra.

Allenby and mobile warfare in Palestine arouse interest among military students the world over—an interest which heretofore has had to subsist on accounts that have lacked many essential elements. The latest addition to the shelf of official British military histories is therefore most welcome. The present volume, published in two parts with an elaborate set of maps, supplements Volume I, which appeared several years ago. It carries the record on through the fast-moving operations that culminated in the annihilation of the Turkish armies.

The author has succeeded admirably in his efforts to present an accurate detailed account of the tactical operations, and a thorough study of supply and transportation difficulties. Those who have studied the American Civil War with an eye for supply and transportation matters will be particularly interested in the present discussion of similar problems. Captain Falls is to be congratulated upon the excellence of the text, and Major Becke on the quality and completeness of the accompanying maps. This book should be in every military library, and in the personal libraries of all progressive officers.

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Firing of 12-inch railway mortar of the 52nd Coast Artillery, Fort Hancock, New Jersey, September 24, 1930.

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